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AN ESSAY ON "THE DISEASES OF LOWER ANIMALS TRANSMISSIBLE TO MAN."*

BY E. MARRISON, M.R.C.V.S.

MR. CHAIRMAN AND GENTLEMEN,—The subject I have the pleasure of bringing before you at this meeting, viz., "Diseases of the Lower Animals Transmissible to Man," is one of great interest to the veterinary practitioner, also of considerable importance as regards the safety of the general public. Now that meat inspection is included in our subjects, we, as veterinary surgeons, are, to a certain extent, held responsible for the safety of our fellow-beings; and thus it is absolutely necessary that we be made thoroughly acquainted with the symptoms, pathology, and *post-mortem* appearances of the diseases now under consideration. As the British public consume such large quantities of flesh, it is one of the easiest things in the world for these diseases to be communicated from the lower animals to man. The professional man also runs great personal risk in examining, treating, or making *post-mortems* on the patients suffering, or dead, from such diseases. It is scarcely necessary for me to point out in which direction the danger lies; and, before handling suspicious animals, he should always make quite certain there are no wounds in his hands by which inoculation could take place. To make quite sure a very good plan is to place the hands in salt and water; and if any slight abrasion of the skin be present he will at once be made aware of it, and consequently take every precaution, such as cauterization, dressing the hands with carbolised oils, wearing gloves, etc.

With these few introductory remarks we will now pass on to consider the diseases in detail.

The first one—the most malignant and fatal with which we

*Read before the Edinburgh Veterinary Medical Society.

have to deal—is anthrax: a specific, contagious, and usually fatal disease, due to the entrance into the animal economy of a micro-organism, viz., the bacillus anthracis, which rapidly develops and propagates in the blood stream, giving rise to the well-known symptoms of anthrax, more commonly known in horned cattle as splenic fever or splenic apoplexy.

The animals most commonly affected are the *herbivora*, e.g., oxen, horse and sheep, the pig, dog, fowls, etc., and, last but by no means least, man.

Some animals seem to enjoy a certain amount of immunity, and among them may be mentioned the cat, white mice and rats, and Algerian sheep (Crookshank). French veterinary writers arrange the influences which predispose to the development of the disease under four principal heads, comprising respectively the influences of temperature, water spread over the surface of the earth, as in morasses and stagnant ditches, forage tinted with decomposing animal and vegetable matters, and contagion.

The flesh of animals which have died or have been killed whilst suffering from this disease should not be used as food, as it is apt to cause death, and the milk of affected cows has proved fatal to man (Principal Williams).

This latter statement, I think, proves beyond doubt how extremely important this disease is, not only to the professional man and agriculturist, but also to the general public, no matter from what standpoint it may be viewed.

The bacillus anthracis is an organism which has been very extensively studied; it belongs to the class of Desmobacteria or ribbon-shaped bacteria, which at some stage of their existence appear to be composed of strings of short rods, either a few segments or a considerable number in each chain; or again at certain periods of their life history, the long filament is present, but is quite unsegmented (Woodhead). The organism was demonstrated by Pallender in 1849, and Davaine supported this view in 1863.

It is a comparatively large organism, measuring from 4 μ—20 μ in length, the average length being equal to the diameter of a red blood corpuscle, and is about 1·25 μ in thickness; it has a characteristic shape, being a rather long rod, broad at each end, truncated, and slightly concave, and when united the concave ends enclose a lenticular space.

It is an ærobic and non-motile germ, and quite naturally infests the blood, and thus, if the supply of oxygen be cut off, soon dies. When an animal is dead of anthrax putrefaction commences early, and this being inimical to the life of the

bacillus we can readily understand that if the organ is to be demonstrated it must be done early ; the ears, the tail, and the feet are considered to be the best parts for examination because they are furthest away from the alimentary canal, where putrefaction begins, and are therefore the last parts of the body to be deprived of oxygen. The best method of demonstration is to take a drop of blood from one of the extremities, place it between two cover glasses, squeeze them together so as to get a thin film on each, then slide apart and allow them to dry spontaneously.

To fix the film pass the cover-glass through the flame of a Bunsen burner a few times. They can be stained with a watery solution of any of the aniline dyes ; or better by double staining, with Gram's method and eosin, the rods are seen to consist of a membrane or hyaline sheath with protoplasmic contents.

The bacilli can be cultivated outside the body, the most common media being agar-agar, gelatine, or potato. In gelatine the growth assumes a feathery appearance owing to the media being liquid.

In agar-agar the growth is in the form of a solid rod ; this being due to the stiffness of the media.

Potato cultivations are characterised by a creamy-white layer, and sometimes a strong, penetrating odour of sour milk.

Inside the living body the organism reproduces by fission alone, spore formation never taking place.

In artificial cultivations the rods lengthen out, and in a few hours have formed filaments a hundred times the length of the original rods, because the media is at rest, and there is no force to break them asunder; further, in each segment of a filament a little clear area will be observed in the centre, very faint at first, but becoming very much brighter; this is known as endogenous spore formation.

After a time the integument falls away, and in the place of the filaments we have a long row of spores, constituting the contagium of the disease in its most deadly and persistent form.

The optimum temperature at which growth may take place is from 30°—37° C.; on the other hand, a high temperature, above 37° C., at once checks all developmental changes. The spores are very tenacious of life, resisting many germicides.

The rods are found to be destroyed by dry heat at a temperature of 212° F.; whilst the spores require to be exposed for three hours to a dry temperature of 283° F. before they are destroyed ; they are killed after a few minutes'

boiling ; the rods, however, perish in a moist atmosphere at a temperature of about 60° C. (140° F.).

Putrefaction and carbonic acid have no effect on the spores, but both rods and spores are killed in ten minutes by corrosive sublimate—1 per 1,000 solution.

Other antiseptics used for the destruction of these organisms are carbolic acid—5 per cent. solution—and Condy's fluid.

Direct sunlight has also an injurious effect upon the spores, and, if exposed to it long enough, has a fatal effect ; it is the only physical condition that appears to disagree with their development, always causing distinct attenuation of their pathogenic virulence before completely destroying them.

The best way of maintaining cultures of anthrax bacillus is by either simply allowing anthrax blood to dry, and then sealing up in a tube ; or by taking off in a thin layer the creamy-white layer from a potato cultivation, and mashing it up in distilled water in a glass capsule.

Sterilised silk thread is cut up into lengths of about a quarter of an inch and soaked in this paste for some hours under a bell jar.

The threads are then picked out with a pair of forceps, laid upon a sterilised glass plate, and covered with a bell jar and allowed to dry.

From the plate, when perfectly dry, they are transferred to a small test-tube, the end of which is plugged with cotton wool.

From these threads cultivations may be made on almost any artificial nutrient media ; the only thing that appears to interfere with their growth being an acid reaction.

Anthrax may be disseminated in a variety of ways, *e.g.*, flies may be the means of spreading the disease, and Bollinger observed that the disease is most prevalent when flies are in great abundance, and he has induced it in rabbits by inoculating them with flies caught on the carcase of animals dead of anthrax.

The flies, however, resist the influence of the virus, although bacteridæ are found in them.

Pasteur asserts that the spores can be brought to the surface of the ground in the body of earth-worms—Koch contested this—but it has now been confirmed by Bollinger, who has found that 5 per cent. of the worms coming from an infected pasture ground contained the spores of anthrax. It is also said to be spread commonly by the importation of beddings; also by manure, such as bone manure imported from Russia.

It may be transmitted from farm to farm by rats, and, in fact, any living body.

By ingestion of the spores, which gain entrance to the circulation by means of abrasions of the mucous membranes of the mouth, pharynx, and other portions of the alimentary tract.

The usual modes of infection from animal to man are: By direct inoculation—malignant pustule—as in the case of butchers, and others employed to skin the carcases of animals dead of anthrax; inoculation taking place by means of the skin on the hands and arms; or by means of the skin or hair taken from animals dead of charbon. By inhalation of the spores as in wool sorter's disease. By ingestion of flesh from an animal dead of anthrax, or by milk and butter taken from a diseased cow prior to death.

Malignant Pustule.—This form generally occurs from one to three days after inoculation implanted on some habitually uncovered spot; it gives rise to a peculiar itching irritation. About a day later a vesicle is formed, and surrounded by a gangrenous inflammation, which rapidly spreads from the point of inoculation to the surrounding tissues.

Hardening and blackening of the part is so extreme, and death of the tissues so entire, that the part cracks when cut with a knife.

There is no pain attending the incisions, so that the pustules thus formed can be excised, the wound well cauterised and dressed with carbolic acid, and the disease may be cured.

If the gangrenous inflammation be allowed to spread until a large area is affected then the bacilli will make their way into the blood stream and general anthrax is the result.

Tanners, skin dressers, and wool sorters also suffer from this disease, but as a great rule due to an inhalation of the spores. In many cases wool sorter's disease is fatal.

When the disease is due to ingestion in the human being you will in all probability get the enteric form. To prevent the spread of anthrax the veterinary surgeon should always endeavour to avoid making a *post-mortem* examination, because it is by this means that the blood is scattered all around, and not only the blood, but also bacilli and spores, the latter having formed in the body after death.

Spore formation also goes on very readily, when the bacilli have escaped from the body, in the presence of oxygen and in a warm and moist media.

For microscopic examination of the bacillus take off an ear,

first tying it with strings and cut through with a hot iron. All the external openings should be plugged up with plaster of Paris, and the carcase promptly buried six feet deep, and surrounded by quicklime, but for preference ought to be burned along with all contaminated material, and thus the chances of infection are greatly reduced.

If anthrax has broken out on a farm all the healthy stock should at once be removed to sound pastures, and it is desirable to give them a complete change of food. They should also receive antiseptic treatment, of which carbolic acid and the chlorate of potash, given in the animal's food, are the best.

The animals should be examined daily for a week, and all those showing a rise in temperature isolated.

Animals ready for the butcher may be removed from the risk of infection by early slaughter.

Preventive inoculation has been recommended, but has not met with success in this country, and consequently has not had such an extensive trial as on the Continent, where anthrax has always been more prevalent, and therefore received greater attention.

Setoning has also been recommended; this simple operation sets up a chronic inflammation, and is supposed to increase the fibrin-forming elements in the blood, and thus the army of defence is greatly strengthened against the invading bacilli.

Principal Williams and others think that the setoning itself does not protect, but that the dietetic and hygienic alterations which accompany it materially tend to stop its progress, and the credit is thus given to the wrong agent.

For my part I think the latter theory the more feasible.

In pigs that have died of anthrax salting for six weeks is said to destroy the virulence of the bacilli, but not unless the curing be complete.

It has been suggested as a possible explanation of some of the mysterious ptomaine poisoning cases which we sometimes hear about, that virulent anthrax flesh has been used in the preparation of sausages, pork pies, etc., and that the cooking was insufficient to deprive the meat of its poisonous properties.

The next disease with which I shall deal is glanders and farcy.

Glanders.—In respect of incurability and ease of transmission to human beings, glanders ranks as one of the most important diseases common to man and animals.

It is a specific, malignant, contagious, and fatal disease, due to the introduction into the animal economy of an organism known as the bacillus mallei, that, in the course of nature, probably never grows except in the living body.

The horse may be said to form the natural soil for its growth; but, as a matter of fact, when it finds its way into the human body it grows there quite as well, or even better, than in the horse.

Glanders is characterised by the formation of small tubercles in the mucous membrane of the nasal passages, and in the lungs; sometimes, also, in the liver and spleen.

At first they are noticed to be firm granulations of a greyish-white colour; these soon soften centrally, giving rise to the deep pit-like ulcers almost invariably seen in the nasal mucous membranes.

The lymphatics and submaxillary glands are found to be enlarged, the latter hard and firmly attached to the bones.

Glanders, and its variety—farcy, attacks horses, asses, mules, sheep, goats, dogs, the feline species, and even mice and rabbits.

It is transmissible to man, by direct inoculation, in whom the virus seems to increase in malignancy.

Cattle, swine, and fowls have immunity, and, even when inoculated, do not take the disease.

Some authorities assert it has a spontaneous origin, whilst others maintain that it originates by contagion and infection only.

Under certain conditions it appears to be of spontaneous origin, as when cases appear in overcrowded stables; after many debilitating diseases, one in particular, viz., diabetes insipidus, which is frequently the forerunner of glanders. Old age, bad ventilation, light, and drainage, bad food, overcrowding—as in barracks and large posting establishments, bad constitution, and overwork: all these conditions may be said to be predisposing causes of this fatal malady.

It has been known to break out on board ship during a rough voyage when the hatches have been obliged to be closed down—in this case said to be due to ill-ventilation of the deck in which the horses are placed.

The bacillus mallei was discovered by Laffler and Schütz in 1882.

They are found in the discharge from the nostril, in the pus, and in the nodules of animals artificially infected.

The organism is very similar in morphological and physiological characters to the tubercle bacillus, being shorter and

thicker, and either found singly, in pairs, rosettes, or in filaments; they are non-motile and ærobic. Spore formation has been described. They can be cultivated on the usual media—glycerine agar, blood serum, and on potato. On glycerine agar a colourless, transparent growth occurs on each side of the track of the needle; if milk be added, the transparency can be done away with, and it takes on a whitish appearance, which gradually changes in colour from amber yellow to reddish brown.

On blood serum the growth is again found to be transparent, and of a yellowish colour.

On potato it has a characteristic colour, which might almost be said to be diagnostic, viz., after a few days it gives rise to a citron-yellow-coloured layer which, after a week, assumes a dark chocolate colour.

The bacillus grows best at a temperature of 37° C.; it refuses to grow at a temperature of 20° C., and also at 45° C., these being the two extremes at which growth cannot take place.

It flourishes most luxuriantly at 25°C., although it rapidly loses its virulence if cultivated for several generations outside the body.

Any of the watery aniline dyes will stain the organism, but the best stain is that of Schütz potash solution, 1 in 10,000, and concentrated alcoholic methylene blue, equal parts.

Wash the section in a watch-glass full of water containing four drops acetic acid. Transfer for five minutes to a 50 per cent. solution of alcohol, fifteen minutes to absolute alcohol, clarify in clove oil, and mount in Canada balsam.

The period of latency is as a rule short, from two to three days after inoculation, but may be as long as six weeks.

Mallein, a glycerine extract of a pure culture of the bacillus mallei, is prepared as follows:—

Take a flask containing bouillon and peptonised broth, with 4 per cent. of glycerine added.

Inoculate with the glanders bacillus, whose virulence has been exalted by passages through the rabbit.

Incubate for three weeks at the temperature of 37°C., sterilise at 110°C., evaporate to one-tenth of the original bulk, then filter, and you have the crude mallein.

Before use dilute to one-tenth with 5 per cent. phenol in water; this is customary, but before doing so first know the original strength. Kept away from sunlight, air, and heat, it will keep almost indefinitely.

The crude mallein is a yellow syrupy looking fluid, and contains 40 per cent. of glycerine. The dose is ¼ c.c.; this is difficult to measure, and thus you dilute to one-tenth, the dose now being 2½ c.c.

Mallein is used as a test for diagnosing glanders, and it has proved a very valuable aid to the veterinary surgeon in cases of occult glanders; the animals can be inoculated, and it is now the recognised test for these cases.

Before subjecting a horse to this test, the temperature should be taken night and morning for two or three days, and if suffering from febrile disturbance, the test should be delayed.

In healthy horses there is no reaction, or only a slight elevation of temperature. In glandered horses, on the other hand, there is a marked rise of temperature (101°-105°F.), considerable local swelling at the seat of inoculation, and signs of general disturbance, while the glandered tumours become more swollen and painful. If the disease makes its appearance in a large stud, all the remaining horses can be subjected to this test; it is desirable to at once slaughter all those found to be glandered, and so prevent the spread of this fatal malady. The stables in which glandered or farcied horses have been should be thoroughly cleansed and disinfected, along with the fittings, harness, clothing, etc.

The walls of the buildings should be scraped, and lime-washed, each bucket of limewash to contain one pint of crude carbolic acid.

The contaminated woodwork should be burned for preference; if iron fittings are in use they should be painted, hence one of the great values of the latter. The best disinfectants are moist heat applied for one hour, carbolic acid, chlorine, and corrosive sublimate.

Principal Williams says it has been found serviceable to administer for several weeks to all horses in the same stud, with every meal, two ounces of the hyposulphite of soda, or two drachms of the chlorate of potash. Glanders is generally communicated to man by accidental inoculation, one case being recorded in which it was due to the accidental inoculation with a hypodermic syringe which had been used for inoculating cultures. Or again by the organism gaining the mucous membrane of the nose or mouth. It is usually found in stablemen, and in fact all those whose duties bring them into contact with diseased animals. In man the disease is characterised by the formation of abscesses followed by metastatic purulent infiltration of the lungs, liver, spleen,

and bones. There may be œdematous swelling of the face, and ulcers in the nostrils. The joints may become swollen and painful. The nodules consist of fibrous tissue, and cells with a tendency to suppuration. In the lungs the disease spreads by means of the lymphatics.

The infiltrated patches are necrosed in the centre, which is surrounded by leucocytes and fibrous tissue.

In man glanders has been said to be cured by frequent injections of mallein. Professor Coleman has experimented upon asses with the virus obtained from man.

Two asses were inoculated with the virus obtained from the arm of a man labouring under the malady, who had been accidentally inoculated whilst dissecting a glandered horse, and both asses died of the disease.

I shall now pass on to speak of the most important disease with which we have to deal, viz.—

Tuberculosis.

This disease, the most widespread of all, is contagious, infectious, and infective, and is due to the tubercle bacillus or bacillus of Koch. It is a communicable disease of man and animals characterised by the formation of new growths excited by the presence of the above-named bacillus.

It occurs in two distinct forms, known as acute miliary and chronic nodular. It is most frequently seen in horned cattle, man, and monkeys; not so common in the horse, pigs, cat and dog, and birds.

Sheep and goats seem very refractory to natural infection, but this can readily be accounted for when we come to study their mode of living.

These animals live in the open air, and are not crowded together in byres like the cows in all our large towns, and are, therefore, less exposed to infection; but although they are not naturally infected, they cannot be said to be immune, for if placed under similar conditions they will readily contract the disease.

Experimentalists have proved that they may resist subcutaneous inoculation, but are not proof against intravenous inoculation where the bacilli are introduced directly into the blood stream.

Again, by repeated ingestion of tuberculous growths they may be made to take the disease.

The localisation of the lesion depends upon the method in which the bacillus is introduced into the economy.

If by the alimentary tract, you get intestinal and mesenteric lesions known as tabes mesenterica. If by the respiratory tract, pulmonary lesions are produced. If it be inoculated under the skin, you get a local lesion followed by one in the nearest lymphatic glands.

The local lesion is a destructive one, and thus the blood vessels may be broken down, and the bacilli, gaining the blood stream, give rise to what is known as generalised tuberculosis.

It is also maintained that generalised tubercle occurs when the bacilli are carried into the thoracic duct by the lymph stream, all the lymphatic glands in the chain being affected, and are thus poured into the anterior vena cava, carried along, and imparted in the capillaries.

Generalised tuberculosis is also spoken of as acute miliary; every tubercle at its start is a miliary one; these by confluence forming the nodular.

Miliary tubercle in the spleen is said by Astertaz to be the surest sign of general tuberculosis. In acute miliary tuberculosis all the vascular tissues are virulent, and the tissues favourable to the growth of the bacilli, notably, the liver, spleen and marrow of bones become the seat of a number of specific granulations, all of the same size and age. The bacillus tuberculosis was discovered by Koch in 1882. It measures from 2 μ—4 μ, and occasionally 8 μ long; is very thin, and rounded at the ends.

They are straight or curved, and occur either singly, in pairs, or in clusters.

True spore formation in old cultures can readily be observed both in stained and unstained specimens.

The organisms do not take on a stain readily, and thus give rise to a beaded appearance; and it has been suggested that this appearance was due to the presence of spores. But whether the stained or unstained portion is the spore, is a matter of doubt.

It is an ærobic and non-motile organism, and is only cultivated with difficulty outside the body.

Koch first succeeded in cultivating the bacillus on solid blood serum with or without the addition of gelatine; incubating the cultures at 37°C. The growth takes places very slowly, and only between the temperatures of 30°C. and 41° C.

In about 8 to 10 days it appears as little whitish or yellowish scales and grains. The best method of cultivating it outside the body is on glycerine agar-agar; the bacillus grows so abundantly in this medium that a culture in fifteen

days is found to be equal in extent to a culture on blood serum several weeks old.

The cultivations on the sloping surface of obliquely solidified glycerine agar-agar begin to appear in from four to six days as very minute white colonies; these steadily increase in size, and either look moist and smooth, or even at this early stage appear dry and crinkled.

Glycerine broth and glycerine milk have also been employed.

While growing, the bacilli elaborate poisons, these extracted bacilli free constitute the substance *Tuberculine*.

There is a difficulty in demonstrating the bacilli in caseous tubercles, but they can often be found in material taken from the periphery of a nodule.

The bacilli can be readily detected if a small quantity of pus be taken from a pus-containing cavity such as are commonly seen in a tuberculous horse.

A perfectly clean cover glass is taken, and a drop of water placed on it; then a small portion of the pus is taken on the end of a needle, and rubbed down with the water already on the cover-glass.

The cover-glass is then dried over a Bunsen burner until the albumen is coagulated; it is then quickly stained in Neelsen's solution warmed in a watch-glass till steam rises, decolorized in 25 per cent. sulphuric acid until the section assumes a dirty brown colour, but if put back into water the brown disappears, and the red colour returns.

It is then immersed in methylene blue solution. After two or three minutes they are passed through alcohol, and oil of cloves, and mounted in Canada balsam.

There are several other methods of staining, but in an essay of this description it would take up far too much time to describe them.

The dissemination of tubercle seems to be a double one, either by ingestion or inhalation, these being the natural means, but then it can also be communicated from animal to man and from man to animal, by experimental or accidental inoculation, accidental in the former, and maybe by both in the latter. The ingestion theory is the more probable both in the lower animals and man. It is transmitted from mother to offspring, by means of the milk, in those animals in which lesions are found in the mammary gland.

There are cases on record in which children have died of tuberculosis due to drinking the milk of tuberculous animals with udder lesions.

Some of these children have been in the habit of drinking the milk fresh drawn in the byre, but the danger in this respect is almost nil when the milk comes from a large dairy in which there are but a few cows affected, because of the mixing of the milk, and consequently the great dilution of the same.

The question has often been asked—Is tuberculosis hereditary?

Those who maintain that it is, say that the germ of the disease is communicated from mother to offspring, and tubercle as a consequence is developed in later life; thus it was said to be in the family, and was looked upon almost to be as great a taint as insanity. As a matter of fact this is not so, for if it were hereditary we should expect to see the disease often in calves shortly after birth, but it is found if these calves be isolated, and fed on milk free from the germs, *i.e.*, either boiled milk or that taken from healthy animals, that they will in all probability never suffer from the disease.

Again, we all know how intimately a child is associated with its mother, being kissed and fondled by her, inhaling her contaminated breath, and breathing the atmosphere actually laden with bacilli from the breaths of the affected members of the family, and how again to a great extent its food consists almost if not entirely of milk.

Is it to be wondered at that, if the mother be phthisical and the animal from which the milk be taken suffering from lesions of the udder, that the child should in later life develop tuberculosis, more especially the enteric form (tabes besenterica) so commonly seen in young children?

The offspring of delicate parents are more subject to disease than the offspring of healthy parents; not only is this the case with tubercle, but also many other diseases.

It may be that the children of tubercular parents are more likely to develop the disease if the bacillus gains access to their system than others who have come of healthy stock, but it is certain they will not do so unless the bacilli gain their bodies; they are more susceptible, but they are not born tubercular, but *tuberculariſable*. It cannot be denied that we have a few congenital or hereditary cases, for when there are lesions in the ovaries, uterus, vagina, or, in fact, any of the reproductive organs, it is a very easy matter for the calf to become affected. As a great rule, however, the cow will abort if lesions be present in any of the above-named organs, more especially so if the uterus be involved, and therefore

congenital inheritance is rare, and plays a very small part in the spread of the disease.

Can the disease be transmitted to man by the meat supply?

This can safely be answered in the affirmative, for has it not been proved by experiments how readily the disease can be transmitted to pigs and dogs by feeding them on tuberculous matter, and although such experiments have not been conducted on the human beings—considering they are one and the same disease affecting both—is it not safe to conclude that the disease is in all probability just as easily communicated to man?

The majority of the veterinary profession are in favour of the wholesale condemnation of all carcases of tuberculous animals, but the danger in this respect is perhaps not so great as that associated with the drinking of tuberculous milk.

There can be little doubt that in those cases where the disease is localized to one organ, or set of organs, at the time of death, there is little danger to be anticipated from eating the well-cooked flesh from other parts of the carcase, and if we could be absolutely certain that the localization was complete, and that these parts had not been contaminated by means of the butcher's knife, all would be well.

(*To be continued.*)

CONGRESS OF THE ROYAL INSTITUTE OF PUBLIC HEALTH, 18TH TO 23RD AUGUST, 1898.

DUBLIN, *9th June*, 1898.

SIR,—We are authorised to inform you that a conference of veterinarians will be held in connection with the above Congress, at 10 a.m., on Friday, the 19th August, 1898, in the Examination Hall of Trinity College, Dublin.

Patron:

Rt. Hon. Viscount Powerscourt, K.P., D.L.

President:

M. Hedley, Esq., F.R.C.V.S., Chief Veterinary Inspector, Irish Privy Council.

Vice-Presidents:

Sir G. T. Brown, C.B.
A. C. Cope, Esq., C.V.O., Board of Agriculture.
J. Freeman, Esq., F.R.C.V.S.
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W. Pallin, Esq., J.P., F.R.C.V.S.
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J. J. Ross, Esq., M.R.C.V.S.
F. C. Winter, Esq., F.R.C.V.S.

Subject for Discussion:

"TUBERCULOSIS" *in its Relation to Public Health.*

Having regard to the far-reaching character of this subject, a series of papers bearing thereon will be brought forward for consideration.

It is hoped to obtain the co-operation of all important bodies, societies, and associations connected with the breeding, rearing, and general treatment of animals susceptible to the disease, as well as of those especially interested in the production of food, such as meat, milk, etc.

It has been decided, in connection with the Congress, to hold in all, four sections and four conferences. There will also be a Hygienic and Bacteriological Exhibition, held in the Royal University Buildings, from August 18th to 27th. Besides the foregoing, a ball, given by the Lord Mayor, a banquet, at which the Lord Lieutenant will be present, various dramatic and musical entertainments and garden parties, also permission to visit places of interest in and around the City of Dublin, will constitute some of the hospitalities to be shown under the auspices of the Congress.

We trust to be allowed to point out that the Congress ceases on the opening day of the Horse Show, thus affording an opportunity of attending two important functions within a few days, and during one visit to the capital.

The minimum subscription for membership is 10s. 6d., payable by means of the enclosed form to the city treasurer, and it is anticipated a generous response from all those interested in the important work of the conference will be obtained.

A programme, with card of membership and full details, will be issued hereafter to subscribers.

We have the honour to be, Sir,

Your obedient servants,

C. CLAYTON, Vety. Lt.-Col.

B. B. FREEMAN, M.R.C.V.S.,

Hon. Secretaries to the Conference.

All communications relative to above conference to be addressed to the Hon. Secretaries, Veterinary Conference, Harry Street, Dublin.

SUCCESSFUL TREATMENT OF OCCLUSION OF THE LACHRYMAL DUCT IN THE HORSE.

BY JAMES MAHONY, ESQ., TEMPLEMORE, IRELAND.

IN reference to a statement of Professor Pritchard's, reported in THE VETERINARY JOURNAL for May, 1898, where he says when lecturing at the Lincolnshire Veterinary Medical Association on the eye, that no such operation can be performed as placing a tube from the inner canthus of the eye into the nostril, I beg to send the following account of a very successful case that occurred in my practice some eight or nine years ago:—

A nice three-years'-old cob, the property of Joseph Molley, Esq., Farney Castle, Thurles, was sent to me for treatment on account of a large accumulation of matter in the canthus of the eye, so that it was necessary, when being driven in harness, for the driver to get down and remove it every three or four miles, so much irritation did it cause. On inquiring into the history of the case, I ascertained that the cob had been bought by the then present owner when a weanling, and this thing was observed, but was thought to be caused by a cold, and the animal was allowed to remain at grass until sometime before he was sent to me when he was broken to harness. On examination the eye looked quite sound, but when I looked into the nostril I saw that the ductus-ad-nasum was wanting, so I decided that an artificial opening should be made from the inner canthus of the eye to the nostril.

I had the cob cast and made an opening in the lachrymal bone over where the canal should be, and I then worked a

passage with an iron-pointed probe through the puncta lachrymalis from the opening I made in the bone, and another passage downwards into the nostril, and then introduced a drainage tube the whole length from inner canthus through the nostril, and left in for about ten days, moving it up and down twice daily. For the first few days the eye was very inflamed, but by sedative treatment that passed over. When I thought the passage was patent I removed the drainage tube, but continued to pass a flexible probe occasionally. I was greatly assisted in making the passage by using the trocar and canula which is used for tapping the bladder per rectum in the human subject.

I sent the cob home all right, and Mr. Molley used him in harness for about three years afterwards, without the slightest return of the ailment, and then sold him, sound, in Thurles Fair, not wanting his use at the time. Mr. Molley has given me permission to make any use of his name in connection with the case, so pleased was he with the result of the treatment.

PRESENTATION OF THE FREEDOM OF THE CITY OF EDINBURGH TO LORD LISTER.

On Wednesday, June 15th, the M'Ewan Hall, Edinburgh was for the first time utilised for a civic function, and a large number of citizens assembled to witness the conferring of the freedom of the city on Lord Wolseley and Lord Lister. The medical profession was well represented, and the hall was barely large enough to accommodate all those who had secured tickets of admission. Lord Lister appeared in morning dress. After the proceedings were opened by the Moderator of the Church of Scotland engaging in prayer, the presentation was made to Lord Lister.

A minute of the council was read by the Town Clerk, in the course of which it was stated that the freedom of the city had been conferred on Lord Lister "in recognition of their very high admiration of his brilliant and distinguished career as a surgeon, and particularly of his discovery and establishment of the antiseptic method of treatment in surgical operations."

The Lord Provost, in his speech, referred to the considerations which had led them to confer the freedom of the city on Lord Lister; he recalled Lord Lister's work in Scotland, beginning with his appointment as house surgeon under Professor Syme. Subsequently to this he became successively

assistant surgeon to the Royal Infirmary, Lecturer on Surgery in the Edinburgh Extra-mural School, Professor of Surgery in Glasgow University, and, finally, Professor of Clinical Surgery in the University of Edinburgh. In 1877 he left Edinburgh and went to London, where he occupied the chair of Clinical Surgery in King's College Hospital until 1896. He was now President of the British Association and of the Royal Society of London. It was in Glasgow that Lord Lister commenced his investigations into the cause of the bad results which so often followed surgical operations in those days, with a view to finding a remedy for the evil, and these investigations, continued in Edinburgh, culminated in the institution of "the antiseptic system of surgery," which would always be associated with his name. He had revolutionised the science and practice of surgery, and had done more to diminish suffering and prolong life than any other living man. It was surely the highest honour to which any man could wish to attain to be a benefactor of his species. It was the glory of such a discovery as his that its blessings were not confined to his own practice or to his own age; it was for all mankind and for all time. Many suffering ones in all lands had already reaped the fruit of his labours, and untold numbers in the years to come would have cause to bless his name. The Lord Provost having in appreciative and eloquent terms indicated the reasons which had led the town council to confer the freedom of the city on Lord Lister, then turned and addressed him as follows: "My Lord Lister, we have great pleasure in enrolling you an honorary burgess of this city, with which you have already such close associations. We and our fellow-citizens—among whom there are many who are your devoted admirers and disciples, and some who are your warm personal friends—welcome you to the highest honour it is in our power to bestow."

The Lord Provost, on concluding his speech, handed to Lord Lister the burgess ticket enclosed in a silver casket.

Lord Lister, in replying, expressed great gratification at the distinction which had been conferred on him by the city of Edinburgh. He had special reasons for feelings of gratitude to Edinburgh, dating from the conclusion of his student days in London, when, as a perfect stranger, he had come to Edinburgh with a letter of introduction to Professor Syme. In Edinburgh he had spent his best and happiest years. He thanked the Lord Provost for his generous reference to the share which he had had in bringing about the latter result, for he regarded all worldly distinctions as nothing in com-

parison to the hope that he might have been the means of in some degree reducing the sum of human misery.

On the conclusion of Lord Lister's speech the Lord Provost, according to custom, called for three cheers for the young burgesses. These having been heartily given, the proceedings terminated.

Among the invited guests were Principal Williams, Principal Dewar, Professors Owen Williams and McCall, Members of Council of the Royal College of Veterinary Surgeons, and Mr. R. Rutherford, F.R.C.V.S., Secretary to the Scottish Section of the Board of Examiners of the R.C.V.S.

CAUDAL MYOTOMY VS. CLITORIDOTOMY.

BY W. L. WILLIAMS, D.V.S., ITHACA, N.Y.

(From the Surgical and Obstetric Clinic, New York State Veterinary College.)

VARIOUS accounts appear in current veterinary literature, from time to time, of the successful treatment of vicious mares by the removal of the clitoris. It is well known that many, or, in fact, practically all of these vicious mares, when kicking or balking, tend to concomitantly switch the tail violently, urinate repeatedly, open and close the vulva rapidly, projecting and withdrawing the clitoris, and in general showing signs which suggest undue sexual excitement.

Apparently regarding this female penis as the seat of important sexual functions, operators have removed it in lieu of castration, though it is known that such animals continue to menstruate and breed as if nothing had occurred, and yet it is claimed that its removal subdues or ameliorates the vice.

Being sceptical upon the question, two cases have entered the college clinic which may suggest a new view of the *modus operandi* of the removal of the clitoris, because in these two cases the viciousness was removed without recourse to genital surgery.

Case I.—A small, rugged, common-bred, aged mare, which had acquired the vice of gripping the reins with the tail, followed by kicking, urinating, etc., and running away, becoming wholly unmanageable, except by tying the tail securely to harness or thill.

The base of each depressor muscle was separately dissected out and cut away for a distance of five inches. The tail was dressed daily until healed, when it was found that the patient had lost her viciousness along with the gripping of the reins.

Case II.—A well-bred trotting mare, used for butcher's delivery, had contracted vicious habits, like the previous case, and had finally become unmanageable after one year's annoyance and danger to the driver.

This animal would constantly try to kick whenever she could catch the rein, or when the breeching would press against her in going down hill, the kicking being accompanied by switching of the tail and urination.

Placed upon the operating table, she was treated the same as the previous animal by student L., and, being released, was immediately hitched to the wagon, and has been kept daily at work without any suggestion of vice.

We have observed equally prompt subsidence of vice in geldings after this operation.

The technique of our operation is extremely simple; the animal being secured in the lateral recumbent position, and the necessary antiseptic precautions taken, an elastic bandage is applied firmly from the apex upward to the base of the tail, in order to render it bloodless, a tourniquet of pure gum tubing applied closely to the base of the tail, the compression bandage removed, and the operation field rendered aseptic.

The tail being sharply flexed dorsally by an assistant, a linear incision is made over each depressor coccygeus muscle, midway between the ischio-coccygeus and inferior border of levator coccygeus, beginning close against the tourniquet, and extending for about five inches towards the apex of the tail, severing the skin and caudal aponeurosis, exposing the bare muscle. The latter is readily separated from its enveloping aponeurosis either with the blade or handle of the scalpel, the envelope being lifted from the muscle with a tenaculum or retractor. A small probe-pointed bistoury is next inserted at the base of the incision on either side of the muscle, and the latter completely severed. The dissection is now completed by cutting away the vertebral attachments of the muscle down to the distal end of the initial incision, where it is excised in the same manner as at the base.

The prolongation of the ischio-coccygeus is left intact. The muscles removed, the cavities remaining are tamponaded with cotton or gauze of the form and size of the muscle removed, sutures being omitted. The tampon may be aseptic, or, as we use it, antiseptic, being saturated with 1 to 1000 sublimate solution, a pad of cotton saturated in the same solution spread over the wounds and the tail firmly bandaged, the tourniquet being removed after the bandaging has been completed as well up to it as possible.

The removal of the tourniquet is the signal for rather profuse hæmorrhage, which quickly subsides. The hæmorrhage appearing so quickly serves to eliminate any irritation from the sublimate within the wound. The bandage is removed after 24 hours and fresh dressing applied, and in 48 hours the bandage and tampon may be omitted and the wounds treated once or twice daily with antiseptics. By omitting the use of the crupper the animal can readily continue its work without interruption. Care being taken to make the two sections of equal length, the symmetry of the tail is not changed except it is carried somewhat higher. The preserved ischio-coccygeus serves to prevent any undue elevation of the tail.

As we know of no essential bond of sympathy between the tail and genitals we can scarcely assume that the myotomy has effected a cure through the medium of the reproductive system.

We are led to think it possible, if not probable, that the education given an animal, by securing it fixedly and performing a painful operation in a region about which it has been previously viciously irritable and is now powerless to evade or resent the pain, plays an important part in the eradication of the vice. If this be true, we should in these operations discard general or local anæsthesia entirely and secure the animal in the most immovable and helpless manner, yet safeguarded against physical injury, which is in our judgment best attained by use of the operating table.

Having attempted but the one operation we cannot, of course, essay to compare the two, though we believe the caudal myotomy has a wider application, being available in geldings. At the same time, it wholly removes the power of gripping the reins and renders the tail far more readily handled in every way. Being bloodless, the operation is very easy and can be carried out perfectly by anyone acquainted with the details and in location can be more readily kept aseptic than can the operation wound after the removal of the clitoris, though either is not important from the standpoint of infection. It is not intended to suggest that caudal myotomy can properly replace spaying in cases where the latter is indicated.

ACUTE PULMONARY TUBERCULOSIS IN THE HORSE.

BY H. THOMPSON, ESQ., M.R.C.V.S., ASPATRIA.

THE following case is, perhaps, on account of its rarity, of interest, and I therefore send it for publication in THE VETERINARY JOURNAL:—

The subject was a dark brown eight-year-old cart gelding, and to all appearances in splendid health and condition, well fleshed and sleek coated, doing his work without any trouble. He was the property of an extensive flour mill company whose stables are the pink of perfection, with good sanitary arrangements. On or about the 17th of last month the horse was observed to be breathing too quickly and looking rather dull, I was called to see him on the 20th May, and found his pulse 65, breathing 40, eyelid injected and dirty yellow, temperature 105°, no cough present, nor any discharge from the nostrils, neither could any abnormal chest sounds be detected. As influenza was very prevalent amongst horses in the district, I put him under treatment, and gave him acetate of ammonia with nitrate of potash, followed up as the case progressed with arsenic, iodide of iron, finally giving half-dram doses of quinine and 15 drops acid sulph. three times a day; all the time he fed fairly well on grass, boiled barley, crushed oats and bran, but continually lost flesh at a rapid rate. About the 1st June abnormal sounds were heard in the chest, resembling the rough rattling mucous rales found in the second and third stages of bronchitis, but still no cough or discharge from the nostrils; the temperature ranged from 103° to 106°, pulse varied from 60 to 70 with rapid breathing, the coat remained fairly good, but the abdomen was very much tucked up at the last; the bowels remained normal throughout without any alterative medicine.

On *post-mortem* examination, the lungs were found to be very much enlarged and consolidated throughout, except a very small portion on the posterior margin; the pleura was smooth and did not show any thickening; a small portion of serous fluid was found in the cavity of the chest, which was detected when the patient was alive; small pieces of the lungs when put into the water did not sink to the bottom.

The bronchial glands were greatly enlarged and hard, and on cutting into them they were found to be very firm and fibrous, and presented caseous areas and even calcareous particles (which is very uncommon in equine tuberculosis).

On cutting into the lungs, they were found to exhibit in many places an appearance very like what one gets in bronchial pneumonia, that is to say, minute white points, scattered over what appears to be healthy pulmonary tissue; in places, however, by confluence, white, firm masses were seen, and these were in many cases caseous.

Bronchitic cavities full of yellowish glairy contents were frequently observed.

I may say that I have never met with a case showing the same symptoms, and had another professional man to see him with me, when he, like myself, was a bit puzzled; on making the *post-mortem*, I suspected that this was a case of tuberculosis, and sent portions of the lungs and bronchial glands to Principal Williams, who has demonstrated the bacilli both in scrapings from the caseous glands and the sections of the lungs.

With the exception of the lungs and thoracic glands, the other organs of the body were quite normal.

MELANOTIC TUMOUR IN A COW.

BY JOHN YOUNG, ESQ., M.R.C.V.S., BROMSGROVE.

MELANOTIC tumours, while common enough in horses are sufficiently rare in cattle as to form an excuse for my publishing the following observation.

In May last I was asked to examine a Jersey cow which was troubled by a tumour growing from the right flank. The tumour was situated about four inches below the ilium, and when the cow was being milked it used to rest on the head of the person milking. It never interfered in any way with the general health of the cow, which ate and throve well, but the owner blamed the knocking of the growth against the cow's side as accounting for the animal aborting her last calf; he resolved, therefore, to have the tumour removed.

It is rather interesting to note, with regard to the etiology of such tumours, that the farmer asserts that this one only commenced to grow after a boy had struck the cow in the flank with a stone, nine months previously.

Casting the cow on the side opposite the tumour, I incised the skin at its base and dissected away for a short distance and then applied the chain of an ecraseur. When I had got nearly through the stump the chain broke and I had to finish the separation by clam and sharp red-hot iron. Some antiseptic dressing was afterwards applied and the cow made a good recovery.

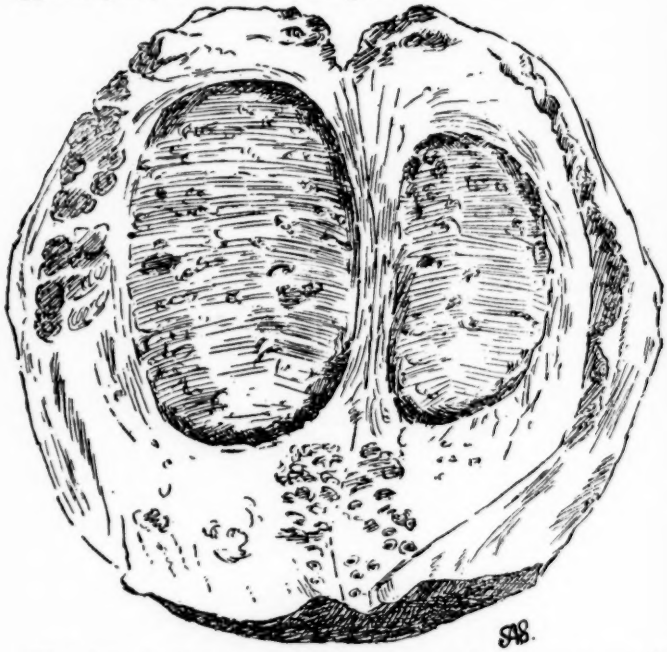
There are no tumours anywhere else on the cow nor on any of her offspring.

The tumour was almost circular and its circumference measured eighteen inches and it weighed nearly four pounds. Principal Williams, to whom I sent the tumour for class purposes, has made a microscopic examination of it and states that it is a pigmented, fibrous tumour or melanotic fibroma.

TUBERCULOSIS OF THE TESTICLE IN A BULL.

BY A. S. LAURIE, ESQ., M.R.C.V.S., EAST LINTON.

THE following remarkable instance of this rare condition has recently come under my observation in the practice of J. Storie, Esq., M.R.C.V.S., East Linton:—Roan shorthorn bull, eighteen months old, has been showing signs of ill-health for some days. He is dull, coat staring, back arched, appetite poor, rumination infrequent.



The right testicle is noticed to be much enlarged, and is found to be painful. The parts are bathed with warm water for a day or two, and as no improvement followed, and as the owner thought that there might be a rupture, we were sent for. I saw him in the condition described above, and thought it was a case of orchitis, probably from a kick. I gave the patient a strong saline aperient, and left an anodyne liniment to be applied after fomenting the testicle.

Next day Mr. Storie saw the bull and agreed with my diagnosis, and continued the treatment.

The testicle gradually got larger, and the bull's condition became much worse, so that castration was advised, and this was carried out one month after the case was first seen by us.

After casting the animal in the usual way, the testicle was found to be enormous, and so was the cord.

The testicular coverings were firmly adherent to the gland as a result of inflammatory new formation. So firm was the soldering that it was thought useless to endeavour to enucleate the testicle. An incision was made high up on the scrotum, and the cord laid bare. A large needle, armed with a doubled tape, was then passed through the middle of the cord, the needle cut off, and the four ends firmly tied, two anteriorly and two posteriorly. After severing the cord and dissecting a little way down, a clean sweep was made of the tumour-like mass. The other testicle was removed with the ecraseur, and was found to be quite healthy. There was a great deal of bleeding, but it was stopped by tampons of tow and per-chloride of iron.

The next day the patient was feeding better than he had done for weeks, and, although he lost flesh for a time, he gradually improved and will soon be fit for the butcher.

On cutting across the testicle, which weighed four pounds, it was found to be pale pink in colour, with here and there yellowish areas, and in the centre a mass of caseated tissue crumbling away on handling, but with little or no calcification in it. The testicle was thought to be tubercular, and on sending it to Principal Williams he reported that a microscopical examination demonstrated that such was the case.

I ought to say that, although the bull had served a good number of cows, he had not succeeded in getting any of them in calf. The foregoing figure is a drawing of the testicle cut across and turned back. The two rounded dark masses were yellow caseous material. Round the circumference also are shown darkened areas, which were affected by caseation.

CONGENITAL GOITRE IN LAMBS.

BY W. R. DAVIS, NEW VETERINARY COLLEGE.

ON March 21st last, Mr. Jas. Elliott, Duncrahill, Pencaitland, sent the carcase of a lamb to the College, accompanied by the following letter:—

I send a lamb for your inspection. I may say that my ewes are lambing a good many of the same kind, which, if not dead when lambed, are only fit to destroy; a few, not so much swollen, are still alive and following their mothers. I should like to know what it is and what is the cause of it. The mothers are in the the best of condition.

On examining the carcase, a huge swelling was observed, extending from the jaw almost to the opening of the thorax. It felt doughy, but the sensation given to the fingers suggested œdema rather than a cyst or an abscess. Slitting up the skin, a distinct capsule was met with, and, on this being opened, exit was given to a certain quantity of bloody fluid, and the remainder of the tumour appeared to be made up of a loose, soft meshwork, the interstices of which were filled with a bloody exudate. Here and there on the surface were blebs which contained a glairy material. It resembled the lesion of malignant œdema nearer than anything, but there was no fœtor, it was quite local, and of course sheep are not susceptible to that disease.

At first an affection of the thyroid was not suspected, and an explanation of the condition was not easy. The fact that a number were affected suggested either that it was an infectious or an hereditary disease. It was difficult to get a piece of the tumour suitable for cutting because it almost ran away before the knife; however, a bit of the densest portion was taken and (after a preliminary fixing for some hours in Muller's fluid), cut in the fresh state, it was apparent that the swelling was due to a greatly enlarged and altered thyroid gland. The tumour was, unfortunately, neither measured nor weighed, but it was certainly larger than a cricket ball and must have weighed from six to eight ounces.

Histologically, the structure of the gland differed from the normal mainly in the great distension of the blood vessels, and perhaps in the new formation of vessels and to the infiltration of the septa with small round cells. The alveoli were mostly large and many of them were distended with blood, others were empty, and a few contained colloid material. Hæmorrhages were everywhere frequent.

It was evident, then, that this was a case of congenital goitre, and that it was of the vascular form.

Goitre or enlargement of the thyroid is pretty frequent in the dog, but it is seldom seen in other animals. From 1857 to 1862 Vicat, of Geneva, is said to have seen it 25 times in horses.

The only account of the affection in lambs that I have been able to find is in an article by Professor McFadyean in *The Journal of Comparative Pathology and Therapeutics* for June, 1890. In these the swelling was much smaller, and the alveoli were filled with colloid material—colloid goitre.

I visited the farm early in April and found that it lay very high, was on limestone formation, and that the water was

extremely hard; conditions that are said to be often associated with goitre. However, no history of a similar outbreak was obtainable, nor had the proprietor or his shepherd ever seen lambs affected in a similar way. The ewes were cross-bred Cheviot and Border Leicester, and were in excellent condition, the rams used were not related to each other, and affected lambs were dropped to each of them, so that the sire could scarcely have had any influence in the causation of the outbreak.

In twin lambs, one was sometimes healthy, and one affected.

Altogether about twenty lambs were noticed swollen, and of these twelve had recovered.

I examined a few of these, and found them in good condition, and apparently quite healthy, although in one case a swelling as large as a golf ball still remained on each side of the throat. A curious feature was the poverty of the coat in those lambs that had recovered. Mr. Elliott informed me that when born they were noticed to have scarcely any wool on them, and even when seen by me, although quite recovered, the coat was plainly far less than that on the unaffected lambs.

STRYCHNINE POISONING IN A DOG—RECOVERY.

BY JAS. Mc PHAIL, ESQ., M.R.C.V.S., DUNDEE.

ON Sunday, June 19th, I received a hurried message to attend a dog, the property of Dr. Sinclair, Dundee. It appears that in order to poison the rats in a cellar of the house, pieces of meat containing strychnine were placed on the cellar floor, and a servant brought a piece of the poisoned meat into the house, adhering to the heel of her shoe, and the dog, unfortunately, swallowed the bait. On my arrival I found the patient presenting the following symptoms:—Respiration hurried and panting, eye glassy, mouth open, and tongue livid and protruding, pulse rapid, the heart beat being tumultuous. Convulsions were frequent and violent, the muscular contractions sometimes forcing the animal almost into the erect position, and twisting the body with various contortions. I at once administered $\frac{1}{6}$ gr. of apomorphia hypodermically, with the result that in a minute or two vomition was produced, the piece of meat being among the stomach contents. I next gave half-a-dram of amyl nitrate as an inhalation, and this greatly allayed the excitement. Ten grains of chloral hydrate in solution was

administered by the mouth, but at every gulp the convulsions appeared to get more violent. However, soon after it was given, the remissions between the seizures got longer, and the attacks less severe. In a short time the patient vomited again copiously, and after this the attacks became frequent and severe. Chloroform inhalations were now tried, but I had to discontinue them because they appeared rather to increase the excitement, and a return was made to the amyl nitrate with the very best results, the dog getting calmer soon after getting a few good whiffs. Twenty grains of chloral in solution was given by the mouth and was retained, and two hours-and-a-half from my first seeing him, the dog went off into a quiet sleep, the convulsions having gradually become allayed. The patient was now put in his basket and taken to the surgery, where ten grains of tannin were administered, and he was left for the night. On the following day, apart from great weakness, the dog appeared to have recovered, but as there was constipation on Tuesday morning, two ounces of castor oil and a dram of spirit of nitre were given. Copious evacuations followed this dose, and a complete recovery resulted. I would like to draw attention to the marked effect which the amyl nitrate had in controlling the spasms, and how little benefit I observed in the use of chloroform inhalations in this my first case of strychnine poisoning.

Army Veterinary Department.

Extracts from London Gazettes. — Vet.-Captain A. E. Richardson was one of the officers favourably mentioned in despatches received from India, for services with the North Western Frontier Force.

Vet.-Captain J. W. A. Morgan is promoted Vet.-Major.

Vet.-Lieut. G. H. Elder, West Somerset Yeomanry Cavalry, is promoted Vet.-Captain.

Vet.-Lieut. A. A. Macfarlane, 1st Renfrew and Dumbarton Yeomanry Cavalry, resigns his commission.

Movements, &c.—Vet.-Lieut.-Colonel J. Matthews embarked for South Africa, 4th inst.

Vet.-Lieut. H. P. Turnbull joined at Canterbury for duty with 10th Hussars, 2nd instant.

Death.—We regret to announce the death of Vet.-Lieut. H. C. Harris, which took place at Jhansie, Bengal, on 8th instant.

Editorial.

EQUITY IN EXAMINATIONS.

THE recent examinations have brought once more before my notice a hardship connected with the marking of the examiners, which I consider it my duty to bring before the profession, in the hope that something may be done to mitigate its severity and to bring about a more equitable arrangement. The hardship of which I complain will be best exemplified by figures. I take, for example, the marks in three subjects gained by a student, thus.—

WRITTEN.		ORAL.		TOTAL.
30	...	30	...	60
25	...	25	...	50
30	...	12	...	42
				152

Such a student would be a good man, but he fails because he is a little below the pass-mark in one subject, and he has to wait for, perhaps, six months, and go through the whole examination again, with the risk of making a similar mistake in another of the subjects to which, as he has already done well in it, he does not give such close attention during the interval of examinations. Let it be noted that if a reasonable scheme of compensation were framed and applied in this case, the candidate would pass, as he has 17 marks to the good.

A still harder case would be the following:—

WRITTEN.		ORAL.		TOTAL.
50	...	50	...	100
50	...	50	...	100
40	...	4	..	44
				244

Here the candidate, with actually 109 marks to spare, must fail, because he is short of the pass-mark by one mark in one subject. No doubt some members of the profession will argue that we don't want specialists or scientists in the veterinary body, and that the three subjects were prescribed by a wise Council to ensure breadth and thoroughness of training and general intellectual strength. Such an argument sounds plausible enough, but I am not sure that it has any great value. Why should we despise or disdain specialists? Our medical brethren are proud of them—and these same specialists make a lot of money. As for scientific profundity and accuracy I value it so highly that I hope to see the day when we

shall by that means earn affiliation to the medical faculties of our great Universities. This, however, is not the special point which I wish to urge. My object is either to get compensation for my two typical students, whereby their excellences shall be allowed to outweigh their deficiencies and a pass shall be granted, or, failing such arrangement, to get a rule passed that a student, when he has done very well in two subjects, shall not need to undergo examination in them again, but may devote more of his time to the subject in which he has failed. I am quite willing to accede to a rule that in such a case of single subject examinations, the pass-mark be raised to 60 if thought desirable. In the case of junior students, the "failed" subject might be carried forward to the next examination. Thus every inducement would be held out to students to pass in all their three subjects at once; the junior would have the unpleasant prospect of four subjects for the succeeding examination instead of three, and the final man would have the mortification of seeing his diploma kept dangling before his eyes but beyond his grasp for six months or so. Yet each would feel that he had been fairly enough treated. The careless student would feel that he had received the reward of his carelessness; the ardent investigator would feel that if compelled, by the rigidity and severity of our laws, to start later than his colleagues, he will run the faster when he does start, and may outstrip those who affected to pity and condole with him on his being "plucked." There are diversities of gifts to students as to other mortals, and our object ought to be to cultivate and foster every kind of gift, and make it available for the good of mankind. Breadth of training is good, but do not let us, in striving after this, give our best rewards to dull and complacent mediocrity, than which nothing is more detestable.

Before quitting this subject I venture to quote a paragraph from the Edinburgh University Calendar, page 346, Regulations for Degrees in Medicine and Surgery:—"If any candidate at these examinations be found to have passed in one or more subjects with sufficient merit, he will not be liable to re-examination in such subject or subjects, although he may have been found unqualified in a subject or subjects comprised in the same division, as hereinbefore specified."

As being germane to this matter I should like to direct my readers' attention to the disclosures of the examination figures in Class B. We there find a sudden and a very serious drop in the marking of Physiology towards the end. The natural answer of the unthinking or unobservant man will be that, as

the best men are put in first, it is natural that they should obtain all the good markings and leave the worse for their weaker neighbours. But this is not so; the men are sent up in alphabetical order, not in order of supposed merit, so that the examiners are allowed full scope for an unbiassed judgment and receive no hint or suggestion from the lists. What is the meaning of this rapid decline in the marking? I know that the candidates thus mysteriously punished are good men, not much above or below those who obtained far higher figures, and I am amazed at the figures. A cynical friend suggested that when the examiner responsible for these figures got so far down on the list he felt tired or hungry, or perhaps he lost some of that calm and dignified repose which distinguishes examiners—in fact, that he became cross and testy. I expostulated with my friend for suggesting unworthy motives, but he replied that he imputed no baseness, but merely emphasised a law of nature, saying that if he had travelled all night, with perhaps but little sleep, and had subsisted all day upon a bun and a glass of—milk, let us say, he would not be in the most genial or judicial of humours, and might quite possibly—albeit unconsciously—vent his ill-humour on the later candidates. I still protested, but my friend silenced me by saying, "My dear sir, don't you know that historians attribute the St. Bartholomew massacre to the simple fact that Charles IX. of France had a bad liver? Yet Charles IX. was allowed by the Pope to call himself the Most Christian King?" To this I had no reply—I felt crushed.

Anatomy.			Physiology.			Stable Management.	Grand Total.	Result.
Written	Oral	Total	Written	Oral	Total	Oral		
47	50	97	41	28	68	45	210	Passed.
38	47	85	37	23	60	45	190	"
41	46	87	44	19	63	68	218	"
40	47	87	44	26	70	100	257	"
32	43	75	34	27	61	90	226	"
34	38	72	32	21	53	70	195	"
21	32	53	30	8	38	85	176	R.
36	45	81	30	5	35	70	186	R.
28	19	37	23	5	28	36	101	R.
20	13	33	26	4	30	80	143	R.
20	10	30	18	3	21	45	96	R.
18	26	44	20	7	27	—	—	—

This is a copy from the official list of the marks of the last of the students' examined that day.

Proceedings of the Veterinary Medical Societies, etc.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE Quarterly meeting was held at the George Hotel, Rugby, on Tuesday afternoon, May 10th. Mr. H. J. Dawes, F.R.C.V.S., of West Bromwich, presided, and there were present: Messrs. Blakeway and McGill, Birmingham; Barrett, Nuneaton; Barber and Over, Rugby; Wragg, London: Wartnaby, Burton-on-Trent; Paley, Walsall; Bainbridge, Wellingborough; Burchnall, Loughborough; Gooch, Stamford; Simpkin, Market Harborough; Trevor Spencer, Kettering; Osborne Hills, Leamington; Blunt, Lutterworth: W. Carless, Stafford; W. S. Carless, Worcester; Grasby and Reynolds, Daventry; Merrick, Northampton; and the Hon. Sec. Visitors: Reginald Over, Rugby; and E. W. Parks, Wellingborough.

The President's Welcome.

Before the business of the day was entered upon those present accepted an invitation of the President to lunch with him. At the conclusion of a most excellent repast, Mr. Over proposed the President's health, and thanked him very heartily for his hospitality, which, he said, was strong evidence of a desire on his part to knit closely together the various interests of the Association.

The toast was cordially drunk, and acknowledged by Mr. Dawes in brief but agreeable terms.

Apologies for Non-attendance.

The SECRETARY announced the receipt of letters or telegrams, apologising for non-attendance, from the following: Professor McFadyean, Dr. Fleming, Messrs. Trigger, Olver, Chambers, Marriott, Beach, Young, Cartwright, Mason, Proctor, Forsyth, Crowhurst, Coe, Crofts, and Prickett.

Mr. Trigger's excuse was that he had met with an accident, in the shape of a kick from a horse.

The SECRETARY said they would all be sorry to hear of Mr. Trigger's mishap and join in wishing him a speedy recovery.

Mr. Trigger and the Council.

The minutes of the previous meeting were read and confirmed, and arising out of them, Mr. Wragg asked what had been done in reference to the nomination of Mr. Trigger as a member of the Council of the Royal College.

The PRESIDENT said that it was his prerogative, as head of the Association, to nominate their representative on the Council.

The SECRETARY said that a meeting of the officers of the Association was held in Birmingham some three weeks ago, and it was decided to act in concert with the Associations of Lancashire and Yorkshire, each of which had a candidate. A joint circular had been issued by the three Associations in support of their nominees.

The Hand of Death.

The PRESIDENT said that since their last quarterly meeting they had to mourn the loss of two of their oldest and most respected members, namely, Mr. A. L. Gibson, of Birmingham, and Capt. Russell, of Grantham. Both gentlemen had taken very deep and earnest interest in the welfare of this Association, and although they had not been often at their meetings of late years, they could ill afford to spare them. In the case of Captain Russell, he occupied the position of President as long ago as 1882. He begged to move,

in all sincerity, that the Secretary be requested to write, in the name of the Association, to the families of the deceased gentlemen, conveying to them the sympathy of the members in the sad bereavements which had overtaken them.

Mr. WARTNABY seconded the motion, which was carried *sub silentio*.

Nominations.

Mr. A. OVER nominated for member of the Association Mr. Reginald Over, of Rugby.

The PRESIDENT nominated Mr. Parkes, of Wellingborough, and Mr. T. Buscomb, of Stroud.

The names will, according to rule, be submitted to the next meeting of the Association for election.

New Members Elected.

The meeting proceeded to vote for those gentlemen whose names appeared on the circular as having been nominated at the previous meeting. No exception was taken to any of them, and they were declared duly elected as follows:

Mr. C. W. Crofts (Northampton), proposed by Mr. MERRICK, and seconded by Mr. OVER.

Mr. W. H. Beach (Bridgnorth), proposed by Mr. OVER, and seconded by Mr. W. CARLESS (Stafford).

Mr. C. Tailby (Birmingham), proposed by the SECRETARY (Mr. Malcolm) and seconded by Mr. PALEY.

Mr. R. W. J. Balls (Worcester), proposed by Mr. W. CARLESS (Worcester), and seconded by the SECRETARY.

Mr. J. R. Bathew (Stone), proposed by the PRESIDENT, and seconded by Mr. BAINBRIDGE.

PRESIDENTIAL ADDRESS.

BY H. J. DAWES, F.R.C.V.S., WEST BROMWICH.

Gentlemen,—My first words to you must be an expression of thanks for having elected me President of this important Society for the ensuing year, thereby conferring upon me a very great honour which I recognise and appreciate to the fullest extent. When I look back upon the long list of those who have distinguished themselves in the same position in previous years, I feel very acutely my own inability to do justice to the occasion, although I shall earnestly strive to justify the confidence which you have reposed in me. Thus, when I come to relinquish the chair, even if I have not quite attained that high standard of excellence which my predecessors have set up, I shall at least be conscious of having done my duty.

I have taken the keenest interest in the Society ever since I became a member, and during my secretaryship my sole aim was to enhance its usefulness. I take little credit to myself for the success I have achieved in that direction, because the assistance and encouragement I have at all times received have rendered my labours easy and agreeable. Indeed, it was this very circumstance that induced me to accept the Presidency, believing that I may count upon a continuance of your sympathy and support in my new sphere of activity.

I hope there will be an improvement in the attendance at the meetings, for I am sorry to say there has been rather a falling off in this respect. It can only be by our united endeavours that benefit will accrue from our deliberations and discussions.

We have all good reason to be proud of the satisfactory condition in which the Association at present finds itself. Since the first meeting at Derby, in 1866, its progress has been steady but continual, until there has now been reached a degree of prosperity which its promoters could never have anticipated. In point of numbers as well as in funds, the Midland Association is one of the most influential in the whole country, and in the politics of our profession is a power which cannot safely be disregarded.

It has in its ranks some of the leading veterinarians of the day, and two of its members have been honoured by the Queen with the Diamond Jubilee Commemoration Medal. I am referring, as I need hardly tell you, to Professor Penberthy and Mr. R. C. Trigger, the former one of our honorary associates who has delighted us "many a time and oft" with a subject for discussion, and the latter one of our oldest members, who has held the offices of President and Secretary with the best results for the Society.

These are honours, gentlemen, which we, in some measure, feel we can share with them, for whilst none will deny that, individually, they have been nobly earned and ungrudgingly bestowed, they shed upon this society a lustre which we, as members also, cannot help but enjoy.

A moment ago I uttered a plea for larger musters at our quarterly gatherings, and I would like to substantiate it by a declaration, superfluous though it may appear, of the advantages to be derived from the intercourse in which we periodically indulge. The association benefits us both socially and professionally; we are brought into closest union one with another, and many an acquaintance ripens into a friendship as enduring as life. It is round the social board, too, that we receive in conversation with our fellow practitioners many a hint which is of great service to us in our every-day pursuits, and thus, from a scientific standpoint, an association such as this is of immense service to its members. We listen to some clever essayists who throw a new light upon interesting and important topics, and never is there a discussion which does not provide some food for reflection.

We must all endorse the remarks recently reported of Professor McFadyean, when he said:—"It is hardly necessary for me to dilate upon the great benefits which these societies have conferred upon the profession at large. It is no exaggeration to say that they have played an important part in the elevation of the profession, and in the education of its individual member." The worthy Professor also enumerated the three principal means by which the young veterinary surgeon might continue his studies even after he had turned his back upon the college. There was, firstly, his own personal observation of the cases which came within the range of his practice, and, secondly, a diligent reading of their scientific journals. The third source of knowledge, and this is the one to which I wish specially to direct your attention, was membership of an association such as this. To quote again from Professor McFadyean:—"The novitiate might acquire much information by associating with his fellow practitioners, and that is one of the great functions of veterinary medical societies. He often had brought under his notice what he thought were illustrations of the advantages of being a member of these societies. In virtue of his office he was not infrequently called into the country and brought into contact in the way of consultation with members of the veterinary profession. If he met a man who was 50 years behind the times, whose pathology was that of Coleman or Spencer, then he knew that man was not a member of any local veterinary society. On the other hand, when he found a man thoroughly conversant with the most recent discoveries in veterinary science, and quite up to the modern methods of treatment, then he knew that that was a member of at least one such society, and he was probably not wrong in concluding that the fact that he was up to the times was in a large measure

due to what he had learnt in attending the meetings of the society or societies to which he belonged." Those, gentlemen, are the observations of so astute a man as Professor McFadyean, and I commend them not so much, of course, to the attention of those present, as to the attention of those who, so far, have been too apathetic to enlist in our ranks.

Before departing from the subject of our association, there is one other matter to which I should like to allude, and it is somewhat in the nature of a suggested reform. I cannot help thinking it desirable that the essayist of the meeting should contrive to send his paper to the Secretary a week or so beforehand, so that it could be printed and circulated among the members. This would be better for more reasons than one. Members would be able to study it before coming to the meeting, and so prepare themselves better for a participation in the discussion; and, moreover, if the paper were taken as read, it would afford more time for its discussion. I have often thought it has been unfair to the essayist, after he has bestowed much time and trouble upon the preparation of his address, and probably undertaken a long journey to attend the meeting, to discover that his remarks are only half criticised, owing to the time at the disposal of the meeting having been absorbed.

Although it is not my purpose to occupy you this afternoon with much that is controversial, there are certain questions of general interest to us, as veterinary surgeons, upon which I should like to venture an opinion, and first and foremost is that of the proposed affiliation of the various veterinary medical societies of the Kingdom with the National Veterinary Medical Association. The idea, as most of you are aware, had its origin in some remarks made by a past president of our own Society, and I think it is one which has in it all the elements of good. Such a representative body would be able to deal effectually with any question which concerned the welfare of the profession, and succeed in adjusting a grievance or removing an evil where individual organisations very often fail. It need not interfere in any way with the regular work of the existing societies, and the financial difficulty, which alone seems to stand in the way of bringing the matter to a successful issue, is one which ought readily to be overcome.

The Victoria Benevolent Fund is another subject of more than passing interest, and the proposal to commemorate the loyalty of the profession to our Queen is one which is under the serious consideration of many thoughtful and intelligent men. The object of the fund is to afford the means of making grants to veterinary surgeons in necessitous circumstances, or to the members of their family, and I believe it has a future before it. In a profession so universal as our own, it cannot be denied that there are in our midst members who, through no fault of their own, are reduced to the lowest depths of poverty and despair. Illness, or other causes beyond their control, may have prevented them making such provision as they would wish for those whom they leave behind, and it is to relieve their distress that it is proposed to establish this fund. The fear has been expressed that it might affect the well-being of "The National Veterinary Benevolent and Mutual Defence Society," but I apprehend no such a consequence. As *The Veterinary Record* pointed out a few weeks ago, the existing society is practically a prudential one, and the new fund would be created for a charitable purpose. The respective objects of the two institutions are so widely dissimilar, and they would be the means of doing such incalculable good in opposite directions, that it is hard to conceive why both should not be enriched at the expense of all who desire to lessen the aggregate of human suffering.

I think that the formulation of a scheme satisfactory to all parties may safely be left in the hands of the large and representative committee which has been constituted for that purpose.

The next matter to which I refer is one which I should like to see taken up

in real earnest, and that is the exemption of veterinary surgeons from jury service. It is manifestly unfair that whereas the privilege is extended to doctors, and even chemists, a sister profession is left on the same footing as the tinker and the tailor. I am aware that we are not unanimous on the question, for I have heard such a staunch defender of our rights as Mr. Hunting express an opposite opinion to my own, but I would anticipate the chief argument against the principle, and deny emphatically that the veterinary surgeon has the remotest desire to shirk his duties as a citizen. Far be it from us any such intention. But if we are required to leave our practice for days together to serve upon a jury, not only our own interests but those of our clients are likely to suffer. I understand that the matter has already been brought under the notice of the Parliamentary Committee of the College, but it has been decided to wait and watch the progress of events, instead of spending a lot of money on a special Bill, with only a slender hope of its passing into law.

Lastly, there is the report of the Royal Commission on Tuberculosis, which, after a good deal of anxious waiting, has at length been issued. True to the traditions of Royal Commissions, there is an absence of unanimity in the recommendations made, and in view of the abortiveness of the two previous inquiries, I am curious to learn what will be the result of this third investigation. It is my opinion that before any real headway is made in the eradication of this dreadful scourge, the veterinary profession will have to be consulted more in the matter, because, without our complete co-operation, no legislation can be effectively adopted.

And now, gentlemen, I will not detain you longer, as you are patiently waiting to hear what our friend, Mr. Over, has to say upon the "Breeding of Hunters," a subject with which he is exceedingly familiar; but before resuming my seat I must reiterate the wish I have already expressed, namely, that our meetings will be well attended during my year of office, for it is only by that means that the objects of this Society can successfully be carried out.

The Breeding of Hunters.

BY A. OVER, M.R.C.V.S., Rugby.

Gentlemen,—Some short time back, among my letters I received a request from our worthy President to read a paper at this meeting. I thought that I was exempt now, and tried to claim exemption, but our President would not concede it, and thought I might read a paper on "Hunter Breeding," which would not be much trouble to me. This, I am sorry to say, was not the truth. Eventually I said I would do what I could just to stop the gap, but I am sorry to say that, in consequence of having been very unwell lately, I am only able to offer you a very incomplete paper. I must therefore ask you to forgive me for any disappointment it may be to any of you, and I trust that any discussion there may be upon it will make up for shortcomings.

In the circular convening this meeting the paper is called "Breeding of Hunters," but thinking that I could not introduce sufficient interest in this only, I have added a few of the complications attending breeding. I have purposely avoided mentioning particular strains of blood. I think what we want principally for hunter breeding are good sized and good looking sound parents, and long distance horses, not the often weedy five furlong horses.

I will pass a book round in which is depicted the portrait of, to my idea, an ideal "hunter" stallion, but, unfortunately, they don't exist in every neighbourhood, consequently we must put up with what we can get.

The Hunter Sire.

Like all other sires, the hunter sire should, first of all, have two good ends.

Breed.—Should be thoroughbred or by a registered sire.

Qualification for a Registered Sire.—Must be by a thoroughbred horse—out of a mare with three direct crosses of thoroughbred (or any one of these may be a registered hunter sire) out of a registered mare.

Colour.—Bay or brown is best.

Height.—15·2½ to 16·1. *Girth*, 6ft. 2in. to 6ft. 8in. *Shin*, minimum, 8¼.

Action.—Should have firm straight action, and bend knees and hocks fairly; plenty of courage, but free from temper.

Constitution.—Hardy, shown by carrying good amount of muscle, a general good doer, big back, ribs, etc., and if has been raced should be a stayer over distance.

Congenitals.—Congenital deformities (such as odd feet) to be avoided.

Hereditary Unsoundness.—Free from what is looked upon as hereditary unsoundness, viz., roaring, cataract, navicular disease, ringbone, and spavin, and I think I would add "sickle hocks," for my own opinion is that a decidedly sickle hock is the worst defect of any, in either a sire or a mare, and my experience has been that it is frequently transmitted to the progeny, rendering them quite unsaleable, at any rate until they become five or six years old, when the hocks have got pretty well set, and perhaps been blistered and fired a time or two, but the price will not often be satisfactory.

Position.—He should stand well on all his legs, with his toes neither turned perceptibly in or out.

Head.—Have a good sensible head, with bold eye and good ears, well-set on a good blood but not ewe-neck, coming well out of the shoulders, which should be deep and nicely oblique.

Shoulders sloping well into the back, so that when you take a plumb-line from the posterior angle of the blade bone you can see the girths will be well away from the elbows.

The Back should be rather short and slightly arched, with tail set on high up.

Good width of hips, but not ragged hips, with big nicely turned long—not drooping—quarters, with big breech and big across the stifles—side view; muscular gaskins, and with big flat bony hocks well let down, and good width and well traced out underneath, not tied in as we frequently see.

Fore Legs should not be too close together nor too wide apart, with long muscular arms and elbows nicely placed; nicely arched knee, or, at any rate, not back in the knees, short below knee, with good flat bone and well defined tendons, not tied in directly under the knee, with good sized fetlock joints; the pasterns should be strong—not too long nor too oblique, neither should they be too short or upright; added to which we should have a good-sized somewhat open foot, with sound horn and frogs.

Middle.—Should be possessed of a good middle piece formed by a deep girth, big through the heart, and with deep back ribs, well sprung and well ribbed up.

Hips.—Horses with ragged hips and a big space between the antero-inferior spinous process and the last rib, are frequently fretful and washy horses, and weakly in their bowels.

Bad mares are frequently sent to the horse, and however bad the produce the horse gets nearly all the blame.

Some years back I used to give a prize of £10 at our show for the best foals by my own horses, but being so disgusted with the mares and of the foals that were sent into the ring, I discontinued the prize, being ashamed of such an exhibition of mares having been sent to my horses—they were a disgrace. You must not think we had no good mares, but they were certainly conspicuous by their absence in the ring.

The Hunter Brood Mare.

Much depends upon the mare, as to what we wish to produce, and the requirements of different districts are such that quite different mares are called for.

If we wish to breed horses up to 16 or 18 stone, we must have cart somewhere, and undoubtedly the mare is the one to supply it, but in taking a cart or heavy mare we must choose one showing quality; this can never be overlooked. But I do not think it is from the first or direct strain that we must go for breeding weight carrying hunters; we must take the next, or even next generation, and then by a judicious cross we may venture to hope for the desired animal, and as we proceed further and further, by continued mating with the thoroughbred horse, we shall get animals varying in strength according to our requirements. As long as the horses are up to the weight we cannot have too much blood for the best parts of the shires, where the enclosures are large and nearly all grass, and hounds at times fairly race. Here a horse wanting in quality and speed would be pumped before he had gone a mile and would probably come to grief very soon when asked to jump the big fences in such a country—for wherever the fields are large depend on it the fences are pretty strong. But in other hilly, banky, plough countries, small enclosures, dykes, etc., a very highly bred horse would not be so suitable, great speed not being so much a necessity, but rather a more compact horse with good shoulders for going down hill, and strong hind quarters for jumping and climbing the hills. As a rule this class of horse is more patient, and consequently a greater pleasure to ride in a cramped country than one that is all the time jumping into his bridle and wanting to go at a big speed.

Brood Mare for the Shires.—To breed hunters for the shires I would choose a well-bred, lengthy mare on short legs, with a bit of size, according to what it is wished to breed. I am certainly in favour of trying to breed big ones; depend on it that if we start on big parents—I don't mean go to extremes—we shall be sure to have quite plenty of small stock. A good big horse is more scarce and much more valuable than a good little one, and should he miss his mark as a hunter he will probably be valuable for harness, as we all know big harness horses, with action—but must have action—are worth a lot of money; not so with the little horse missing his mark as a hunter.

Mare.—Size 15-2 to 16-1, lengthy, on short legs, with quality, and a good coloured bay or brown for preference, with good courage and temper; having a nice blood head and lengthy neck, but not too long and not ewe necked; ears nicely pricked, not lop-eared, which are much against the sale of anything except a racehorse, and I don't think they are any advantage there. These are sometimes thought to show the character of some particular strain—Melbourne, for instance. Good shoulders are a necessity, and I like to see a good wide blade bone at the top and not too thick over the withers, although it may be strong. Girth 5ft. 10in. to 6ft. 10in. Strong back and big ribs and good wide, but not ragged hips, tail well on the top, quarters not drooping but nicely turned, big and long; big bony hocks, not tied in below nor standing too far away. I would again like to put a black mark against sickle hocks, I would much prefer a mare with spavin, for although I live in one of the principal hunting districts in England, and have for years been in the habit of examining a great many hunters, I must say that I only occasionally come across a hunter lame from spavin, and I think you will agree with me that very many hunters have spavin, coarse hocks, or what term we like to apply to those exostoses.

The forelegs should be a fair width apart, not both out of one hole, as the saying is; the elbow should be nicely placed and not too much under the chest, making the mare to stand head first and look heavy at the shoulder

points, which would pitch her on to her fore legs in going; with long muscular arms and nicely forward knees, short cannons with big flat bone and well defined tendons, pasterns not small but nicely proportioned, not too long or too short, neither too oblique or too upright, and good open foot, with sound horn and big frogs.

The head-first appearance, mentioned above, I have seen to such an extent in the foal that it has been mistaken for deformity, the humerus being quite horizontal, thus throwing the elbow very far back and making the animal look almost like a kangaroo; in the course of a short time, when the foal gets its strength, it will probably get all right.

Mare for cramped or hilly country.—I should say that the class of mare should be a lengthy Welsh mare on short legs, wtth good shoulders to go down hill and big strong back and quarters to climb the hills and keep jumping. Other particulars, I should say, much as in other mare, perhaps not quite so high, with good bold and fearless action.

Age to commence.—I think three years old a good time. She should first be put into the breaker's hands and then she may be served; any time in April is, I think, early enough, in fact, I think, too early for most farmers, they often being short of accommodation. I think half-bred foals are early enough when the grass has come, and there is seldom much grass before the early part or middle of May. Then at weaning time, viz., four off, the mare will be ready to go into hard work and be made into a hunter during the winter, and if good enough sold as hunter at end of season or following autumn, when she would be five off, a very nice age; many good dealers won't buy younger ones to sell again. Thus she would produce a foal to take her place.

Condition for service.—Should mares which you wish to breed from be in very high condition, perhaps it would be well to give them a dose of physic and reduce their corn before putting them to the horse.

Trying Mares.—This is a particular part wanting a great deal of care, for mares are like young ladies, they want a great deal of understanding, a particular I daresay most of you have already found out. The mare's head should always be presented to the horse first to give them an opportunity of looking and smelling at each other, and perhaps have a little conversation in their own particular way; having done that the mare may now be put alongside, etc., quietly, but do not hurry or knock the mare about; if you do many will be put off showing and will be missed.

Hobbling; twitch.—The mare now found to be in season should be hobbled carefully. I never have a mare served unless she is hobbled, for safety of both mare and horse. The twitch should be used as little as possible, but it cannot always be dispensed with. Neither directly before or after service should the mare be ridden or driven fast or long distances, nor should she be allowed to lie with a gelding.

Repetition of service.—Should the mare remain in season more than four or five days after service, I would, if practicable, give her another service. I am not an advocate for serving a mare again too soon if satisfied that service was a good one. I know this course is not allowed in some studs, a mare is only allowed one service for one period of œstrum, but I think that is mostly in cart-horse studs, where horses have a great many mares, and I do not think there is much fear of nag horses having too many mares nowadays, for according to my experience there is not more than one-third of the nag horses bred now that there were 10 years ago. Consequently the profits on keeping stallions for hunter breeding only has in most places become quite a thing of the past; the foreign supply has brought this all about. I think there are very few of the premium stallions that complete their number at only two guineas apiece, after being selected and

examined by good men, both of which should have great weight, but I think most horsemen like to back their own opinions as well.

Foaling Mares usually come in season about the ninth day after foaling, but an eye should be kept on the mare on the eighth, as some come on earlier, and others may not show for several days later; if it should happen that the mare gets missed at this period, and it frequently does in consequence of the mare when tried not showing very plainly, it is often under these circumstances thought that she is just coming on and will be well in season to-morrow; but on the morrow she has gone past. Now we must watch and try her again on the twenty-first day after foaling, which is a good day for service, particularly after a mare has had a bad foaling time; the generative organs will have had good time to get over their trouble. When a mare is served about the ninth day, it is good practice to try her again on the twenty-first; after this, if convenient, she may be tried once a week for six or seven weeks, and if she does not break in that time, I think there is good hope that she is stinted. Should she break after eight or nine weeks, it is very probable that she has miscarried, and, in case the time has advanced after the first week in July, I would let the mare run by to another year. A mare, although in foal, may do a fair amount of work as long as it is continuous and not a lot of backing work. I would not recommend a brood mare to be worked for a time, and then rested for a month or more, and then put to work again. I have known many mares to hunt a *good part of season* and carry foal safely; this has been when covered late, and owner has thought that mare was not in foal until finding her sluggish and noticing at the same time that she either increased in size or that she did not reduce in her ribs or belly according to the work she was doing.

Gestation.—The period of gestation is usually about eleven months—a few days more or less. I have known one or two cases where the mare has carried and foaled a live foal at twelve months and three weeks.

Waxing.—When within a month or so of foaling, the udder will begin to enlarge; if mare lies in at night, it will be noticed more in morning, and will walk down during the day. A swelling, more or less, will often extend along the belly, sometimes to a great extent, which is seldom of any consequence; the legs, too, may become œdematous, as also we occasionally see about the throat, after mare has been hanging head down grazing for a time. Now put mare in good airy box, having first arranged to hang a lantern from near the middle of roof by means of a pulley, so that it can be pulled up and down at pleasure, and, when lighted, I think I need hardly say, have it sufficiently high to be out of the mare's reach; by this means we can look frequently to see what progress the mare is making without disturbing her, as the continual flashing of a lantern from the hand would do; it is also saving of help at time of foaling, when perhaps there is none too much at hand. The man should be provided with a pair of strong scissors with which to cut the cord (I prefer scissors to a knife, as the latter, if not very sharp, is apt to pull the cord), some string well saturated with some disinfectant dressing, and bottle of disinfectant to smear about the navel; and direct man to wash his hands and arms well with some disinfectant before meddling with the mare. As the time of foaling draws near the udder will become full, when a piece of wax, more or less elongated, will usually be seen hanging from one or both teats. From this time the mare should not be lost sight of for long; she may leave off waxing and not foal for another week or two; but generally, when a mare waxes well, she does not go more than about thirty hours. The wax may break off and the milk run down mare's legs for several days; but don't neglect her, thinking that as she did not foal last night, she won't to-night. The quarters will be noticed to sink and the bearing will become elongated. In the daytime, if she seems fairly comfortable, a little walk into the paddock

will not hurt her ; in fact, I think it will do her good. I had a thoroughbred mare this season which for several days did not seem happy, either in or out of the box : if in, she wanted to go out ; if out, she wanted to go in ; but I am pleased to say that she brought me a very good colt on Easter eve, and which I hope you will hear good things of in time to come. Very shortly before foaling the mare will usually walk round and round and smell about the box, and lie down and get up a time or two ; all at once she will break out into a perspiration, when you may be sure that, all being well, it will be over in a few minutes. She now lies down and commences to pain ; she must not be left now, and when the water-bladder has well come, the attendant may go in quietly ; but don't be in too big a hurry, give the mare a little time. Presently the water-bladder should be broken, if the mare has not already done it ; we next look for both fore feet, and between them the head of the foal should be. As the mare pains, a little help may now be given by pulling gently at the fore legs, and at the same time see that the fœtal membranes are not over the nostrils and mouth. In case the foal does not come forward pretty well, extra help, which should be near at hand, may be called, and in case of further difficulty, a rope may be put on each fore leg and head ; for the latter a fixed rope—not a running noose.

The foal being born, see that the mouth and nostrils are clear of membranes, when the breathing will commence gradually. The umbilical cord should now be tied, and afterwards cut with a pair of strong scissors (which are preferable to knife), about two or three inches from the belly. Do not make the mare get up, but take the foal round to the front of the mare that she may lick it, which helps to dry the foal and to establish the circulation. Do not hurry to get foal on its legs, but have plenty of straw by the walls, and let him struggle about till he gets strong enough to require very little help to put him on his legs. He won't hurt for an hour or so without milk, and when he can stand, he may be directed to the teat, and perhaps a little milked into his mouth. As a rule, he soon takes to the teat, but some are very troublesome, as are some mares from their irritability, and also from the teats in some young mares being so small. After from three to ten days' time, they may—if weather permits—be turned out for a short time.

As soon as circumstances permit, have box cleaned well out, and if same box is wanted for several mares, use disinfectants.

Mare after Foaling.—Should the mare not clean, I would not meddle with the membranes for a time, more than, perhaps, lift them up a bit. After 12 hours or so, I would then try them lightly, and if after 24 hours are still retained, I would turn up my sleeve well and use little stronger manipulation, but not strong enough to tear them away from the attachments, and now pass hand into uterus as well—still using a little force, but not too much, as I do not believe in tearing them away. They are frequently found to adhere very tightly in one or both horns, and however much force we employ, we cannot get it all away ; we may break it, but I prefer leaving some long shreds to lay hold of another time. I would now inject with warm water containing some disinfectant—such as chinosol, liq. pici. carbonis, or Jeyes' fluid, and repeat, if necessary, morning and night. Whatever I inject, I like at the same time to remove, which I do by converting the pump into a syphon, as I frequently find womb to be flaccid and mare unable to eject it. I always use two buckets—one clean for injection, and the other to draw into direct from womb ; this latter need not necessarily be a clean bucket, as it is only for the purpose of catching the stinking fluid and being thus able to carry it away instead of having it about the floor of the stable. A second injection may, perhaps, be given to insure the womb being washed out clean. If we tear the membranes away, I think we are running a much

greater chance of poison being absorbed through the abraded portions, and I think we shall at the same time be running the risk of causing the mare to pain, and evert the womb. Should mare pain much, and I think there is fear of eversion, I at once put on clams and give mare big doses of chloral hydrate

You will notice that the tube of my pump is longer than usually sent out—9 ft. or 9 ft. 6 in. The usual length is 6 ft., which is much too short; but if you want it any longer you must order it and wait, or, as I have done—have a joint put.

When injecting, the hand should be kept over the end of the pipe till you can move your finger in a lot of fluid, which the end must be kept in or will not act as a syphon. Feeling that you have plenty of fluid you may direct your attendant to hold the pump up a trifle higher than the level of the other part of pipe, and then unscrew the pump and put the pipe over the second bucket; you must still keep the end within the womb well covered in the palm of the hand, or you will find that portions of membrane or womb itself will soon block up the holes by suction. By this means you can take out nearly all you pump in, and frequently more, for there is often a good deal of fluid in the womb of its own secretion. By this means also, comparing the two buckets, you can make pretty sure you have removed about all you put in, and we get rid of the poison instead of allowing it to remain inside and be absorbed.

By way of medicine, I usually in such cases, according to circumstances, give plenty of whisky, ammonia, and cinchona, and must say that since I have adopted the above measures I have not had so many cases of septic laminitis, and when that has taken place it has generally been less severe and ended very favourably compared with years gone by. Should I notice or be suspicious of laminitis coming on, I at once have shoes taken off and apply cold poultices.

The Fœtal Membranes.—I have some of these taken care of every year. If the membranes are washed and then spread out on something till nearly dry, you will find this very good material either for the jam pots or for ointment pots, it is much less trouble to use than bladder.

Should foal have any difficulty in passing the meconium inject some warm water with enema pump, and repeat it as often as necessary. I am always afraid if the foal is allowed to strain much that it will induce scrotal hernia. About the eighth or ninth day, when the mare is coming into season again, the foal generally scours more or less, but unless it at the same time refuses to suck we need not take much notice of it. At such times I generally give the mare some sod. carb. in mash or drinking water morning and night, and continue it as long as foal scours. Should I think it has gone on long enough and should receive treatment, I then give some diarrhœa mixture, which I believe is recommended by Professor Penberthy, in a little wheat flour gruel, and which I find to be very effective, and have mare milked partly out several times during day, that foal shall not have too much.

(*To be continued.*)

CENTRAL VETERINARY MEDICAL SOCIETY.

A GENERAL meeting was held on Thursday night, the 2nd June, at the Royal College of Veterinary Surgeons, 10, Red Lion Square, Holborn, Mr. J. A.W. Dollar, the President, occupying the chair. There were also present 35 Fellows of the Society, and two visitors.

The minutes of the preceding meeting being incomplete, it was decided, on the motion of Mr. HURNDALL, seconded by Mr. MULVEY, that their confirmation be deferred to the July meeting.

Communications stating inability to attend had, it was reported by Mr. F. C. MAHON, Hon. Secretary, been received from Mr. W. F. Barrett, F.R.C.V.S., barrister-at-law, who had undertaken to read a paper on "The sale of horses considered from a legal aspect," but he was professionally detained at Huntingdon, being one of the counsel engaged in the St. Neots poisoning case; from Mr. R. Moore and Mr. Prudames.

Election and Nomination.

Mr. W. S. Mulvey. 67, Lower Sloane Street, S.W., was unanimously elected a Fellow.

Mr. W. H. Flook, of Putney Hill, S.W., was duly nominated for election.

Fractured Vertebræ.

The CHAIRMAN explained that Vet.-Major J. Philips had brought with him an interesting pathological specimen, and that in the unavoidable absence of Mr. W. F. Barrett, Professor Macqueen had promised to introduce a subject for discussion afterwards.

The subject was a black mare, seven years of age, belonging to the Army Service Corps at Woolwich. The injury evidently occurred when the mare was in draught, descending a steep hill, on the 7th of March last.

She was brought to the infirmary exceeding lame on both hind legs, but much more so on the off leg. An endeavour was made to place the patient in slings, but without success. It was therefore well bedded down and allowed to rest. A decided, though gradual, improvement took place until the 28th of the same month, when the lameness became excessive. The patient evinced great pain when the hand was placed on the hip (antero inferior process of the ilium). No fracture or other lesion, however, on examination per rectum, was detected.

On the 8th April, the case getting worse instead of better, the mare was destroyed, and a careful *post-mortem* examination made. The only lesion found was the fracture now placed before you for your inspection. It may be added that the bones, with others, were placed in a copper and, unfortunately, subjected to a too prolonged process of boiling.

In reply to Mr. Hurndall, Major PHILIPS said in his idea there was a possibility of a partial union of the bones, and that the extra boiling had dispersed the material.

In reply to Mr. Mulvey: The animal was injured on the 7th of March and destroyed on the 8th of April.

In reply to Mr. Walpole: The age of the mare was seven years.

Answering Mr. Porch: What he had expected to find was fracture of the neck of the pelvis, but he could not detect this in the examination of the rectum. There was no paralysis in the case.

Mr. ROWE said he was of opinion that union had never really taken place.

Mr. SINGLETON: The time which elapsed from the accident to the day of the boiling excludes the idea of the deposit having been affected by the boiling. It was submitted to the boiling process after a month.

Mr. HURNDALL said he had not reached any conclusion as to any definite time wherein material might be thrown out and ultimately become of an osseous character. He did not think a month could be considered sufficiently long to negative the idea that the material thrown out might have admitted of subjection to the influence of high boiling pressure.

Mr. SINGLETON: I think, taking it as probable that the complete union would have been effected in six months, and that the first steps in the union would have been of a very cartilaginous, soft nature, all the more easily affected by boiling, I think the osseous deposit begins to form at the end of the month.

Mr. WALPOLE thought their thanks were due to Major Philips for bringing this interesting specimen under their notice, although they were obscure as to the nature of the complaint from which the animal suffered. He moved a vote of thanks to the Major.

Mr. HURNDALL seconded the motion, which was adopted unanimously.

THE IMPORTANCE OF CERTAIN DEFECTS IN HORSES EXAMINED FOR SOUNDNESS.

BY PROFESSOR MACQUEEN.

Professor MACQUEEN, after expressing regret that Mr. Barrett was unable to fulfil his engagement to read a paper on that occasion (although they rejoiced in his professional progress, and the fact that he was retained in the St. Neots poisoning case), said he had had no opportunity of preparing an essay since being asked to fill the breach caused by Mr. Barrett's absence. Hence he asked the indulgence of the meeting. The professor continued: Mr. Barrett was to have dealt with the subject of "The sale of horses considered from a legal aspect," and it was my intention to have followed his paper with another concerning "Certain defects in horses examined for soundness." To-night I propose directing my remarks to this theme. I have no desire to express definite opinions—my object is to try to elicit from the members round the table their experience of such defects. I do not propose to consider the question from a legal standpoint, or in close connection with soundness, but I desire to evoke the opinion of the members, as far as may be possible, as to the practical importance, or wearable importance, if you like, of the defects to which I shall refer. Without further preface, I will allude to a few defects of the eyes.

The Eyes.

What is the importance of corneal opacities? Doubtless the importance varies with the position, size, and density of the opacity and with the class of horse. Opacities in the form of delicate lines, dots or specks, sufficient to cause shying, were difficult to see, but when they occur in hunting and other horses used for saddle work, they are often responsible for shying or other inconvenient behaviour. At the same time corneal opacity may be of little importance. My own impression is that corneal opacity in draught horses should not be considered of much importance. The defect might be mentioned, perhaps it ought to be mentioned; but the estimate should be low. On the other hand, in horses of a high class—hunters and hacks especially—and to some extent in carriage horses, opacities of the cornea are of considerable importance.

Then with regard to large *corpora nigra*. I know it has been disputed whether large *corpora* interfere with vision. Very seldom have I been able to satisfy myself that those large pigment masses affect the sight, and for some time I have treated large *corpora* very lightly, but I am prepared, having regard to the class of animal, to consider this defect as of some importance.

Recently I saw a shying horse in which, after careful and repeated examination, the only defect discoverable was a large double mass of pigment hanging from the upper margin of the pupil. The pigment divided the opening of the pupil into three parts, and I have no doubt that in this case the sight was imperfect.

With opacity of the lens, or cataracts, I have little difficulty. A cataract of any size is a defect of more or less importance. But the defect of the lens to which I desire to draw your attention is not specifically alluded to, so far as I know, in veterinary text books. In aged horses free of discoverable

cataract, examination by the naked eye, aided by a hat or sleeve, will fail to reveal anything distinctly wrong in the lens. In some the lens may appear dim, in others milky or opaque, but no definite opacity or cataract will be seen. If you apply the catoptric test to such eyes, you will find in the great majority of cases some blurring, duplication, reduction, or other imperfection of one or two images of the flame. The anterior or corneal image is generally perfect, but the posterior and middle images may be very indistinct. The posterior image may be reduced to a pin's head in size. In my experience this condition of lens often occurs in old hunting and hack horses, and also in carriage horses. It is not uncommon in horses submitted for opinion as to the cause of shying. I should like to hear your views as to what importance ought to be attached to this condition of the lens. Such horses cannot be rejected for cataract if you must specify the defect. One may hold in one's own mind that the lens is defective, and so describe it in the certificate; but should an explanation of what is actually wrong with the horse's sight be asked for, what may one say? I have satisfied myself that such horses do not always see perfectly, and I am convinced that they sometimes pass muster as sound in eyes. But this should not cause surprise, for anyone who restricts his examination of aged horses to the naked eye test, must frequently pass animals with faulty lenses without being aware of the defect. I cannot go into the question of suggesting a remedy or of working out the relations of blurred images to sound eyes, but I should like to hear your opinions. These are three points in connection with examination of the eyes well worth discussion: The importance of (1) corneal opacity, (2) large *corpora nigra*, and (3) defective lenses not showing distinct cataract.

Marks on Poll and Withers.

Next I wish to bring to your notice the occurrence of scars and white marks on the horse's poll, withers and collar seat. My opinion of the importance of such scars is rather low. A horse may have been affected with poll-evil or with fistulous withers, and the mere existence of a bald patch, scar, or white spot is to me of little or no importance so long as the horse does not show any sign of flinching when the part is manipulated. I may be wrong; not being in general practice, I have not the opportunities which practitioners have of following up horses that exhibit these marks, but I have little or no hesitation in minimising their importance while mentioning their existence.

Swellings at the Knee.

Passing lower, I come to what may be called thecal swellings or distension of the extensor tendon sheaths above and at the knee. In cart-horses, and sometimes in hunters, you will find a thecal swelling, sometimes more than one, somewhere on the knee or above the knee. Now, what is the importance of such defect? My own custom (I do not make it a rule, for each case must be decided upon its merits) is to mention in the certificate the existence of thecal swelling, and to estimate, as far as my judgment will allow, the importance of that swelling according to the class of work the horse is expected to do. Thecal swellings in hunters, encroaching or extending to the knee, may be a very serious defect. A thecal swelling, extending over the knee and rendering the joint more or less stiff during action and interfering with the horse lying down, is rather an important defect in the cart-horse. I have had several cases of thecal swelling in front of the knee increasing at work and interfering materially with the usefulness of the cart-horse. Gentlemen, what is your experience of thecal swellings?

Similar swellings in connection with the flexor tendons at the back of the knee are very important, but as horses affected with distension of the carpal sheath are not often submitted to examination for soundness, I think I may pass that point.

Distension of the sheath of the flexor tendons below the knee is not an uncommon condition in cart-horses, and it sometimes occurs in horses of a lighter class and a higher price. I always regard such swelling with very great suspicion, and I must say I hesitate and take a long time to make up my mind when dealing with a high-priced horse with thecal swelling below the knee. Here I may say a word or two on thickened tendons. I do not refer to ordinary extensive thickening of the flexor tendons, but to a small swelling which occurs a few inches below the knee where the check ligament joins the perforans tendon. In most instances this limited thickening occurs in hunters. Horses thus affected may hunt, but they go lame when trotted slowly on hard ground. I consider—at least this is my practice—that when the swelling is restricted to a small area, when the horse does not flinch on manipulation and trots fairly well on stones, that such horse, although technically unsound, may be risked. That is to say, I regard limited thickening of the tendon, exhibiting the symptoms mentioned, as not of such importance as to prevent the animal's use in hunting.

Windgalls.

Windgalls are of two kinds, and I fear the distinction is not always carefully drawn. Windgalls of the fetlock, fore or hind, are connected either with the joint or with the flexor sheath, and it is rather important to distinguish articular windgall from tendinous windgall. Articular windgall seldom causes inconvenience until the horse attains a great age, or until the defect assumes the condition of a large unyielding swelling, which may interfere with the action of the fetlock joint. This is not so, however, in my experience of windgalls connected with the flexor sheath. Windgalls which are compressible and removable by bandaging are not serious. But windgalls which are hard, unyielding, and incompressible, cause stiffness and sometimes lameness. Such windgalls should always be mentioned with a certain amount of reservation. They may be satisfactorily disposed of in the certificate as indications of wear, but horses so affected seldom exhibit first-class action.

Blemished Knee.

With regard to blemished knee, I am aware that in law books blemished knee does not constitute unsoundness, but I should never pass a horse with blemished knee without mentioning the defect. I have a very low estimate of the importance of many cases of blemished knee. It is nothing to me how the blemished knee has been caused, whether in the stable or on the street. I hold that a veterinary surgeon should not accept the responsibility of saying nothing about the blemish. You may depend upon it that the defect will be discovered by some one very soon after the horse changes hands. As to the importance of blemished knee—and this is where I think the judgment and advice of the veterinary surgeon are useful—knees may be blemished in many ways, and the position of the scar varies considerably. In some instances the veterinary surgeon may consider it necessary to make a special note or remark regarding the blemish. I speak strongly, perhaps, on blemished knee, and I rather fear that I do not run abreast with some practitioners on this point. Occasionally I have to examine horses that have been examined by other practitioners, and I may say that blemished knee does not often occur in the certificates of my friends. But frequently I refer to blemished knee as a mark of recognition. If average

importance be attached to the blemish, if there be a distinct scar on each knee, indicating that the animal sustained the injury by coming down, then blemished knee should occupy a place with the defects—estimate its importance as you may.

Splints.

Now as to splints. These defects, I think, are often wrongly appreciated. It is the custom, I believe—though I do not know how it originated—with some practitioners to condemn horses for splints, and with many other veterinary surgeons to pass horses with splints, the splints being mentioned as defects and the certificate qualified to that extent. At other times horses having splints are passed without any qualifying remark. While splints may be mentioned in the certificate, I must say that I regard splints in horses free of lameness as of little importance. It is not the existent splint, but the splint that is yet to form, which is important. Frequently I pass horses with splints, informing the purchaser not to fear the splints that already exist but to be prepared for others yet to come. That is my view. Rarely have I been able to connect lameness with an old splint, but many very popular and influential practitioners believe that there is a kind of recrudescence of inflammatory action in an old splint. I believe that is possible if an old splint is struck. But in the case of the ordinary splint which has been in existence, say, two or three years, I maintain that a horse may go on for life and never show lameness from that particular splint. If a horse fall lame from splint, it is because the splint is in process of formation, and it is generally a new growth.

There is another point on which I differ from practitioners, and that is as to the position of splint. It is a common thing for a client to ask you, in the case of a horse with a splint, "Is it a badly placed splint?" By this he means is it placed backwards near the tendons. Now, with very few exceptions, I do not believe the position of splint is of any importance. The exceptions I make are splints in connection with the articulation of the knee. These should not be called splints at all. And splints which occur behind the bone, under the suspensory ligament, splints which usually cannot be diagnosed without great difficulty and which cannot be reached by ordinary treatment. But the point I wish to insist particularly upon is the custom—which has gained ground in the profession—of making too much of splints already in existence. My practice is to minimise existing splints—assuming the horse is free of lameness—and to prepare the purchaser of a young horse for lameness arising from splints that may come by-and-by. A fully formed splint in a young horse is not of much consequence, but it serves to indicate to me that the animal is likely to throw out another when put to hard work.

With regard to exostosis on the pastern, I very rarely see ringbone of the old-fashioned sort so well described by early writers; but exostoses or splints, if you like, on the pastern are very common. If I had had longer time I could have brought specimens of exostosis of the pastern. I have no desire to discuss the importance of ringbone or exostoses involving a joint, but I should like to hear your views of non-articular growths on the pastern. Nodes, knots, or small exostoses occur most frequently on the sides of the pastern, and in cab-horses there is another position where a troublesome growth often appears. This has been called the cab-horse disease. In London it is caused probably by a blow from a foot when turning a corner or when pulling up, and in some cases the fetlock is wrenched as well as struck. However caused, it often gives rise to lameness, and, if neglected, I find that the exostosis increases and extends to such an extent that it may fairly be described as ringbone; it encroaches upon the fetlock joint. What is the importance in practice of exostosis of the pastern? Frequently I recommend the purchase of horses with "knots" on

the pasterns, which I describe as enlarged. I do not call the defect ringbone. My advice is based upon experience that horses very seldom fall lame for any great length of time from simple exostosis of the pastern.

The Hips.

Regarding the hind limbs, what is the importance of unequal quarters, or the defect sometimes described as "down in the hip?" Assume that the horse has recovered from the effects of fracture, and that the only defect discoverable is inequality of the hind quarters. I consider that unequal quarters, while constituting a defect of some importance in connection with market value, is of no importance as regards the practical usefulness of the animal. A horse with deformation of one quarter may be as useful and as likely to continue useful and for as long a time as one with normal quarters. The market value is lessened to a certain extent. This defect is occasionally passed without remark, and sometimes the inequality of the quarters is difficult to see.

The Hock.

As to defects of the hock. It surprises me how much less often now than formerly one hears of cases of bone spavin. In my experience, this defect is seldom mentioned in certificates; yet there can be little doubt that bone spavin is of frequent occurrence. I cannot venture an explanation of the change in practice with regard to enlarged hocks, but it is probable that less attention is now paid to such cases. My view concerning bone spavin is very much like that already expressed in regard to splints. If a horse that is not lame shows fair hock action, and uses the joints freely, I do not care very much whether he has bone spavin or not. Everyone must have had experience of horses with indisputable bone spavin which have worked free from lameness for many years. Here, again, I would say, assuming the horse is not lame, that it is the exostosis or spavin yet to form which causes mischief. Hocks may be odd, large, coarse, or irregular, and yet wear well; indeed, I might almost say that coarse hocks wear best. The hock which I do not like is one which cannot be rejected as unsound. It is severely clean, but very narrow, especially towards the shank. That is the hock which usually wears badly. I hope to elicit your opinions on this point, and therefore ask you to make a special note of hocks.

Perhaps I should stop now, as the time is up and you may be tired.

The CHAIRMAN: Will it be convenient for Professor Macqueen to finish his address on a future occasion, and to submit specimens?

Professor MACQUEEN: What I should prefer is to conclude to-night, condensing what I have yet to say as much as possible. I shall try to produce specimens at the next meeting.

The CHAIRMAN: Very well.

Professor MACQUEEN (continuing): Occult spavin is a very serious disease, but as horses affected with this form of spavin are seldom submitted to examination for soundness, I think I may pass on to bog spavin.

Bog spavin, or distension of the capsule of the true hock joint, may be acute chronic. The acute form, in my experience, is usually confined to one hock, and in most cases is incurable. Owing to lameness, the affected horse is not presentable for examination. But the chronic form, sometimes called "false bog spavin," is a comparatively harmless condition. Bog spavin occurs mostly in underbred horses, and in horses with straight hocks. In stallions sometimes it may be attributed to the work of covering, and in other horses to wear aggravated or not by faulty conformation of the hock. I have very seldom seen a horse lame from "filled hocks" or simple chronic distension. What is your experience of such hocks? Do they cause trouble?

Now as to thoroughpin. It is necessary, I think, in practice to make a distinction between thoroughpin in connection with the hock joint, and thoroughpin of the flexor sheath. Thoroughpin of the perforans sheath is common enough, and sometimes rather important. I often hesitate to pass for fast work a horse with tendinous thoroughpin of one hock, because occasionally at an interval more or less long after examination, I have found the horse affected with lameness, perhaps mechanical, but certainly arising from interference with the action of the hock. Articular thoroughpin is less serious, but there is a possibility of the swelling being injured in the stall or loose-box and proving very troublesome to treat.

With regard to curb, I do not intend to provoke discussion on what is curb. I, however, hold my own idea of its nature, and incline to accept the tendinous theory of curb. In many cases where there is nothing wrong with tendon or ligament the defect is simply faulty formation of the back of the hock. I do not refer to curby or sickle hocks, which are sometimes free and occasionally not free of curb. I believe there is an impression that a curby-hocked horse is not likely to throw a curb, but only last Whit-Monday I saw a curby-hocked horse with two large curbs. Is curb a serious defect? My opinion is that a small curb—that is, one that is difficult to see, which may be overlooked, and which cannot be found with facility—is a curb of very little importance. The curb which I do not like to see, which I should not pass, and which I scarcely like to undertake to treat, is large and conspicuous. The swelling extends upwards and across the back of the hock, inclining generally to the inner side. That is a serious curb. But the small curb, the mere prominence at the back of the hock, if the horse remains free from lameness after the usual gallop for wind, is a defect which, while it ought to be mentioned, is of very little importance.

The Foot.

Let me add a few words on the foot. What is the meaning of flat foot? I hold that many horses are born with feet that will wear flat in the sole. Is not flat sole a natural condition in some horses? You may call it a vicious conformation if you like, but so long as the soles of all four feet are like unto one another, I would regard flat sole as of small importance. Indeed, I may remind you that since the recent development of farriery, and the very conservative treatment of the hoof now adopted in this country, it is difficult in many instances to make a satisfactory examination of the sole, owing to the non-removal of loose horn at the time of shoeing. What good purpose can be served by loose masses of horn? In my judgment, loose horn in its effect is almost comparable to gravelling, and frequently I find it necessary, in order to ascertain the condition of the hoof, to clear away those loose masses of horn.

What is the importance of a spreading foot? Is it possible for a horse to have feet too large? I contend that it is. A horse intended for fast work—even for slow fast work, if such a peculiar contradiction in terms can be permitted—a horse with big, clumsy feet is not a good wearer. I cannot reject a horse for having large feet; at the same time, I take care to indicate the size of the feet, when excessive, as a recognition mark.

What is the importance of narrow heels? I refer to horses with blocky feet. Here I find myself at issue with those members of the profession who think that narrow heels always indicate disease. I deny it, and maintain that not more than one in ten narrow heeled horses is affected with disease. I have as much faith in the usefulness of narrow heels as in heels that are widely set. I am not quite sure, but I incline to think that in wearability widely set heels are less reliable than narrow heels. I should not preferably buy a horse with narrow feet, but if the animal were otherwise satisfactory I

should not refuse it, and I should not advise an intending purchaser not to purchase because of the existence of narrow heels alone. When examining a horse with blocky feet I make distinct mention of the defect and try to estimate, as far as my judgment will permit, its importance in the particular case. But I do not go the length of saying that narrow heels indicate approaching navicular disease. I do not believe that. There is another danger which may cause nearly as much trouble as navicular disease, although it may not be so prominent. I refer to the occurrence of corns in deep-heeled horses which, if not eradicable, are difficult to remove, no matter how the horse may be shod. Here, I would ask, what is the importance in practice of corns? I do not pass horses with corns without mentioning the defect, irrespective of the size or depth of the lesion. It is unlikely that a horse with suppurating corn will be presented for examination, but other corns are not uncommon, and I regard their existence—especially in shallow and deep-heeled horses—as of great importance. As to ribs or rings on the hoof; what importance should be attached to these? A horse with all four feet ribbed may be sound so long as the ribs are continuous from heel to heel, equally spaced, and not interlaced. The number is of no consequence. I regard such ribs as effects of change of diet, as a run at grass or a change in stable feeding. While ringed hoops may be suspected by horse buyers, I must say that so long as the rings or ribs correspond to the description just given they should be considered as of very little importance.

Sandcrack.—In horses used for slow work superficial sandcracks may be dismissed with small consideration, but I always mention their existence. No one can say where a sandcrack may extend. I fear we do not exactly know enough about sandcracks, but I may take this opportunity, without breaking friendship, to allude to the very excellent advice on diseases of the feet given in a book recently issued, for which we are indebted to our worthy president, Mr. Dollar. The "Handbook of Horseshoeing" contains many suggestions as to the origin and treatment of hoof troubles, which are well worth reading.

Then as to *sidebone.*—Sidebone in cart-horses I regard as of little importance so long as the feet are of good shape. I constantly recommend the purchase of cart-horses with sidebone, and so far have not had cause to regret that advice. My belief is that the importance which is often attached to sidebone in cart-horses is built upon a wrong foundation altogether. Although sidebone is only of occasional occurrence in light horses, I certainly should not advise the purchase of a high-priced carriage horse affected with sidebone. On the other hand, I have no hesitation—apart altogether from the question of shoeing or the supposed connection between shoeing and ossified cartilages—in advising the purchase of horses affected with sidebone so long as the feet are good and the horse is intended for slow work.

On the motion of Mr. HURNDALL, seconded by Mr. SINGLETON, the discussion on Professor Macqueen's address was deferred to the next meeting.

At the instance of Mr. MULVEY, thanks having been accorded to the Professor for his able and lucid address, thanks to the Chairman closed the meeting.

WESTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

(*Continued from page* 437.)

Discussion.

The CHAIRMAN said they had just been treated to a highly scientific and practical paper, and he hoped they would discuss it freely.

Mr. PENHALE (Barnstaple) said he differed from Professor McFadyean in thinking that he had been dogmatic or had laid down a too hard-and-fast rule.

They acknowledged that they had had the pleasure of listening to the greatest authority in England on this disease. Although anthrax was, as a rule, so fatal, they had had some crumbs of comfort. It had come as a surprise to him (the speaker) that, after all, the life of the bacillus might not be so very long. If there was, say, exposure to the sunlight, and if putrefaction set in, say only in a moderate degree of cold, it appeared that the germs would die. If proper precautions were taken in regard to disinfection and burial, the land might be again rendered free. He could endorse what the Professor had said—at least, regarding cattle generally—that infection was, no doubt, through the digestive organs. He was not sure that for many years they had not been a little bit dogmatic. When scientific men could not see a reasonable explanation of a thing, they were apt to be a little bit dogmatic. But that might lead one into error. He was now alluding to abrasions of the mucous membranes. He remembered the time when it was thought impossible for a horse, whose mucous membranes were sound, to become glandered. It was thought that there must be a wound along the digestive track somewhere. Experiments since that time would go a great way, he believed, to disprove this, although the Professor seemed to say that it was rather rare to find animals with mucous membranes that were called sound where no abrasions had taken place. In an extensive outbreak of anthrax in this neighbourhood, where a hundred animals died off in three or four days on one farm, it seemed singular that, although all were infected in the digestive system, a large number of the animals should have been found suffering from an abrasion of the intestinal track. These germs had the power of penetrating through moist and soft membranes.

Mr. BLOYE said he wished on behalf of the association to give Professor McFadyean a cordial welcome, and to tell him how pleased they were to get him there, so far in the remote west, to give such an admirable lecture and demonstration. To discuss such a lecture would be akin to painting the lily. They would not allow for a moment that he had assumed a dogmatic manner, but they did allow that he could afford to assume a dogmatic manner should he care to do so. There had been no man whom he (the speaker) had watched who had been so absolutely sure of his facts before making them public as Professor McFadyean, whose statements could always be relied on. They might safely do so in regard to his statement and work in connection with anthrax. Much of his experimental work which he had mentioned that day would be of the greatest use to all of them. They valued the statistics which he had given them in regard to temperatures, and the results of his experiments in inoculations. He could endorse what the Professor had said in regard to the variability of the size of the spleen in animals which died of anthrax; in the case of a cow he had seen the spleen five times its normal size, and in the case of an ox he had seen the spleen scarcely enlarged at all.

Mr. GOLLEDGE spoke of the risk which ordinary persons ran of misleading themselves by relying on microscopical examination in the diagnosis of anthrax.

Mr. HEATH said that all of them who had seen cases of anthrax should give their testimony to bear out, or otherwise, the practical conclusions to which the Professor had arrived. A more instructive paper had never been read before the Association. He (the speaker) could endorse, from practical experience, the Professor's statement that many animals recovered from anthrax. He had seen pigs recover after a serious illness with their throats enormously swollen. He saw a case just before Christmas where a farmer had a sheep die in a field, and the carcase was given to pigs and a dog. Three of the pigs were found within a day or two dead, and several of the others had swollen throats, but recovered. The sheep dog was ill, but recovered. He had seen the case of two sheep dogs which had been near a

diseased bullock, and one had died and the other recovered. If an animal died suddenly, and they did not know what it died of, it should be buried with disinfectants. That was the best advice they, as practitioners, could give to their clients.

Mr. HARVEY said one good thing would be done if local authorities in the West of England could be induced to recognise the importance of the burial of animals found dead, or having died without the cause being known. Authorities in Cornwall did not think one had done right unless one cut up the animals, and thus done more injury than if they had been left in the skin. If agriculturalists could be induced to take to heart the point in the lecture, *i.e.*, that it was highly necessary to bury all animals found in that way, a great good would be done.

Mr. ELDER said that part of the lecture which dealt with the life history of the bacillus must be of great practical use to them all. A thorough knowledge of that would enable them to act properly when called to a case of this description, and give directions which would be a benefit to their clients, and reflect credit on themselves. He was very pleased to hear the Professor say that so many recoveries took place.

Mr. DUNSTAN related particulars of a few cases of the disease which had recently come under his notice, and said it was now, he thought, generally recognised that the disease did not necessarily need for its attack that there should be an abrasion either of the skin or mucous membrane. He wished to lay emphasis on the great necessity of having the blood as fresh as possible for making a diagnosis of the disease by means of the microscope, as the fresher the blood the less risk is there of mistaking the malignant œdema bacillus and other putrefactive bacilli for those of anthrax. One good method of distinguishing the bacilli was to stain by Gramm's method. The anthrax bacilli will stain by this method, whilst the malignant œdema bacillus will not stain by it.

The CHAIRMAN said he could bear out the Professor's remarks that many animals, especially pigs, died from asphyxia, and from that they could no doubt trace the infection through ingestion. He was glad to hear the Professor say that swelling in the throat was almost a diagnostic sign.

Professor MCFADYEAN, in reply, said he felt gratified that the views to which he had given expression had been so generally corroborated by the experienced members of that society. The discussion had hardly elicited a single point regarding which there appeared to be any difference of opinion. He was sorry if he conveyed the impression that it was his own belief that cattle, or any other animal, must have abrasion or lesion 'of the alimentary canal to ensure infection. He did not express himself decidedly. The experiments of Monsieur Pasteur had results which served to indicate that wound of the mouth would favour infection, but his (the speaker's) own opinion was that as sound an animal as could be found in the world could be infected by ingestion. He was well aware there was, at one time, a controversy of the same nature with regard to glanders, but he could never understand what justified any human being in maintaining that a horse must have an abrasion of the mucous membrane to ensure glanders infection. Who could tell, looking from the outside of a live animal, that it had an intact mucous membrane in the respiratory or the alimentary passages? He would allow any individual who maintained that an abrasion was necessary to select a live animal free from abrasion, and he would infect it. He was quite sure that abrasion was not necessary. It was true that if they selected a number of animals, whether sheep, cattle, or pigs, and fed them with virulent anthrax material, and if they embraced in the experiments a considerable number of animals, some of them would not show any symptoms. That had been known for a long time.

Pasteur had shown that spores could actually pass through the alimentary canal and be recovered again in the fœces. There was nothing marvellous about infection with an intact epithelium. The leucocytes, while of great service in dealing with organisms at the moment of penetration—although they were a little over rash in running away so fast—and were, undoubtedly, highly protective, were, nevertheless, sometimes instrumental in infection. He should like to protest against the claim of those who called themselves scientific men, when they refused to admit a fact because they did not know the explanation of it. We must not deny facts because we cannot explain them. We must go on working and try to find an explanation. He thanked Mr. Bloye for the kind things he said about him, but he thought he went a great deal too far. He would advise a little more caution in that respect, because he claimed no infallibility in regard to his interpretation of facts; but he did like to be right about his facts. Of course, they might all be wrong about their opinions on them. He was glad to find Mr. Heath's experience corroborated what he said about pigs; and he had been interested in what Mr. Dunstan had said of the case in which a man had been in the habit of buying up carcases on which to feed fowls. He had had something in his notes about the susceptibility of fowls. It was generally held by bacteriologists that fowls were, in any circumstances, immune against anthrax. He had been told that fowls had died after eating an anthrax carcase, but he had never been able to verify such a case. It was known that fowls could be experimentally infected. Pasteur showed that they could, but the experiments went to bear out the opinion that fowls enjoyed a high degree of immunity. It was an interesting case, the one mentioned by Mr. Dunstan, where a cow, which had been taken to a farm to a bull where there had been a case of anthrax, had died from anthrax the next day. He (the Professor) would venture to say that the cow did not contract anthrax at the farm to which she was taken, because he did not believe the period of incubation in the ox was ever so short as twenty-four hours. If an animal was inoculated with large quantities of virus, in no case would the animal die within twenty-four hours. He did not think there was a case on record of death occurring from anthrax in twenty-four hours after infection. In the guinea-pig, a vastly more susceptible animal, death, as a rule, occurred at a longer interval than twenty-four hours; it was usually between twenty-four and thirty-six hours. In the ox he thought what one might call the period of incubation—the period that elapsed between infection and death—ran to days, three or four, and in some cases considerably longer. He did not deny that the horse might contract the disease by inoculation. He thought it was a rare method of infection. Curiously enough he had one case of a horse inoculated in Cornwall. In that case the horse was inoculated through a man taking a skin of an animal and carrying it on the horse's withers. That horse died of contracted anthrax. He was quite satisfied that black quarter was not communicable to the pig or the dog. In conclusion he said it had given him great pleasure to listen to the discussion, and to make the acquaintance of the members of the society.

The CHAIRMAN proposed that the thanks of the meeting be given to the Professor for his instructive lecture, and remarked that his researches had been a great boon to the profession and to the nation at large. The Chairman also proposed that the Professor be elected an hon. associate of that association.

Mr. PENHALE (Barnstaple) seconded the motion, which was carried unanimously.

Professor MCFADYEAN, in response, said it had been a real pleasure to him to attend. He always enjoyed going to meetings of the local veterinary societies throughout the country. He did not very often go outside London,

where his duties were pretty onerous and hard; but he hoped before long it might be possible to come back to this association.

The President then entertained the company, which was the largest ever present at any of the association's meetings, to a sumptuous dinner, after which the usual toasts were proposed and duly honoured.

JOHN DUNSTAN, *Hon. Secretary.*

CONTAGIOUS DISEASES ANIMALS ACT, 1894 and 1896.

SUMMARY OF RETURNS OF OUTBREAKS, for the four weeks ending June 18th, 1898.

ENGLAND AND WALES.

Pleuro-Pneumonia.	Swine Fever.	Glanders. (including Farcy).	Rabies.	Anthrax.	Sheep-Scab (for month of May).
None	Outbreaks 271 Slaughtered 4,302	Outbreaks 56 Attacked 88	Dogs 2 Other animals 0 Destroyed 0	Outbreaks 32 Attacked 42	Outbreaks 40

SCOTLAND.

None	Outbreaks 12 Slaughtered 510	Outbreaks 4 Attacked 15	None	Outbreaks 12 Attacked 17	Outbreaks 6

IRELAND.

None	Outbreaks 41 Slaughtered 422	Outbreaks 1 Attacked 1	Dogs 14 Other animals 5 Destroyed 47	None	None

APHTHA OR VESICULAR STOMATITIS OF THE HORSE.

BY D. HUTCHEON, COL. VETERINARY SURGEON.

I OBSERVE that this disease is reported to have re-appeared in the Transkeian territories and some eastern districts.

Nature of the disease.—This is an eruptive febrile affection of the horse, characterised by an eruption of vesicles which appear on the tongue, inside of the lips and cheeks, and frequently occur on the outside around the muzzle and nostrils. These vesicles—aphthæ—are irregular both in size and shape, but they are usually circular of a yellowish colour, and slightly raised above the surface of the mucous membrane. These vesicles burst, and form ulcerous looking sores, which often run together, leaving the tongue and lining of the lips and cheeks quite raw and very painful; rendering the animal unable to feed except with great difficulty. This last condition is

most frequently observed in aged or debilitated horses. In a healthy, well-nourished animal the disease is generally mild, and invariably yields to simple treatment.

The disease is communicable by inoculation, but it does not appear to spread rapidly by infection. For instance, a healthy horse with a clean and uninjured mouth may eat out of the same manger with a horse which is suffering from the disease, and remain free from any appearance of it. But if there are any sores or abrasions about the horse's mouth, produced either by the bit, or from feeding on thorny bushes, such a horse is very liable to become affected. When a human being becomes inoculated through having cuts or abrasions of the skin of the hands very intractable sores are sometimes produced.

The disease appeared in the colony about the beginning of March, 1884, and was first reported to me from King Williamstown and Peddie districts; I was unable to fine out where it originated. Previous to that it must have been very rarely met with, as many old and experienced farmers and horse-owners informed me that they had not seen it before. Many were of opinion that the disease was introduced by the horse eating prickly pears and thorny bushes; the ordinary food being very scarce at the time on account of a prolonged drought. But I saw it amongst horses in localities where there were no prickly pears on the veld and also among stable-fed horses. It certainly prevailed most, and was most severe and intractable, amongst poor and debilitated horses, whether the poverty was induced by insufficient food or hard work.

Disorders of the digestive organs are recognised as a cause of this complaint, both by human and veterinary pathologists. It is quite possible, therefore, that the disease arose, in the first instance, from some peculiar local conditions, associated with the food or water, acting on an enfeebled constitution, but there can be little doubt that it assumed a contagious character of the nature above described.

The disease prevailed most along certain post-cart routes, and amongst the horses belonging to the Cape police. When it entered a stable of post-cart horses, it generally affected the majority of them. On the other hand, I knew of numerous instances, in private stables, where one horse only was affected, although no efforts were made to isolate the sick one, or prevent him from from eating and drinking out of the same vessels with the others; it disappeared very much as it came, without any very apparent reason. Since that time, however, frequent individual outbreaks of this disease have been reported; one of these occurred in the Swellendam district during the year 1895.

Treatment.—This resolves itself into constitutional and local remedies.

First, with respect to constitutional treatment. If the affected animal is otherwise in good condition, give him a pint of raw linseed oil followed by a teaspoonful each of saltpetre and flowers of sulphur daily while the complaint lasts. If, on the other hand, the horse is poor and debilitated, add a teaspoonful of sulphate of iron to the above mixture, and supply him with soft, succulent, nourishing food, such as bran mashes, green food, carrots, etc.

Second: local treatment.—This consists in cleaning out the mouth three times a day, with antiseptic astringent lotions such as strong solutions of alum, bluestone or boracic acid, an ounce of either dissolved in a bottle of water. When the mouth is very sore, raw, and smells very badly, add half an ounce of carbolic acid, or an ounce of Jeyes' fluid, to any of these mixtures. There are many other lotions which may be used, such as solutions of chlorate of potash, salicylic acid, and many owners use little else but common salt and sulphur, placed in the mouth.

The simplest and easiest method of dressing a horse's mouth, is to elevate

the animal's head, then quietly introduce the neck of the bottle containing the lotion into the side of the mouth, and allow the mixture to run out of the bottle until the horse's mouth is pretty full, then gradually lower his head, when he will rinse out his mouth by the action of the tongue as the fluid trickles out. Do not attempt to throw or dash anything into a horse's mouth, or it will cause him to resist any subsequent dressing.—*Cape of Good Hope Agricultural Journal.*

A FEW WORDS ANENT WOLF-TEETH.

BY DR. L. A. MERILLAT, PROFESSOR OF DENTAL SURGERY, M'KILLIP VETERINARY COLLEGE, CHICAGO.

Synonyms: Rudimentary premolars, anterior premolars, undeveloped premolars, retrogressive premolars, supernumerary teeth, supplementary teeth, remnant-teeth, eye-teeth.

Definition.—Wolf-teeth, so-called because they bear some resemblance to the canines of the dog or wolf species, are retrogressive dental structures undergoing degeneration in the modern domestic horse, and representing the anterior premolars of extinct species.

Anatomy.—They are located in the interdental space of the upper jaw, rarely the lower, usually related to the anterior border of the first molar, but may occur in any part of the interdental space behind the canine. The common location of those not contiguous to the molar is from one-half to four centimetres from it.

Size.—The variations in their size, shape, and structure, due, no doubt, to the varied integrity of their surroundings, their poor individuality, and their tendency to degenerate, exceed those of all other normal structures. A majority of the observable ones vary from four to thirty millimetres in length and from two to eight millimetres in diameter. Others, favoured with influences conducive to dental development, attain the size of a canine, and in rare cases assume the characteristics of herbivorous molars, while still others never reach the period of eruption, but remain invisible to casual inspection.

Shape.—In shape they vary somewhat less than in size, resembling a human canine-tooth in many respects. They present a well-marked neck, fang, and crown, and in this respect seem to represent teeth of temporary dentition. Their crowns, divided from the fang by a well-restricted neck, are varied in shape, but always irregular, and if closely related to the molar may present a flat posterior surface. The fang constitutes the major portion of the tooth. It tapers to a blunt, rounded extremity, is irregular, often curved, and is always covered with rough incrustations of cement. It has no foramen at its apex, as the pulp-cavity is obliterated at an early stage of development, if it exists at all.

Structure.—The better-developed ones are composed of the fundamental dental substances, normally arranged. The enamel-organ forms a cap for the crown identical with the enamel-cap of the human molar; but, unlike the latter, it soon wears so as to expose the dentine—an herbivorous characteristic. It does not, however, extend beyond the neck, as in the typical herbivorous molar.

The dentine constitutes the bulk of the tooth, seldom interrupted by an infundibulum or a pulp-cavity.

The cement forms a thin layer over the neck and fang. It serves to increase the solidity of its implantation, and is the only medium through which the tooth obtains nutriment.

In fine, their structure resembles the simplest form of mammalian teeth—*i.e.*, a body of dentine capped with enamel and incrusted over the remaining portion with cement.

The very rudimentary ones show no regular arrangement of the fundamental substances, but consist of a homogeneous mass of dentine, dense on the exterior, and becoming less so toward a central white cylinder, which seems to represent the original pulp-cavity.

Evolution.—They are frequent if not constant in embryo, and are arrested in growth at different periods of their evolution by the exertion of some recondite influence—probably according to Darwin's doctrine of natural selection. It is apparently conservative to state that a large share are arrested in growth during their fœtal life; others reach various stages of development after birth, while only a minority attain the period of eruption. The latter—the observable ones—alone demand attention, and may be classified according to the time of eruption into two classes:—

1. Wolf-teeth of temporary dentition.
2. Wolf-teeth of permanent dentition.

This classification should not be mistaken to signify that temporary and permanent wolf-teeth exist, as they are never supplanted when once removed.

The first class are those very rudimentary teeth which appear between the tenth and twenty-fourth month. They seldom withstand the shedding of the first molar, or are so disturbed by this event as to render their removal quite certain at an early period.

The second class erupt between the second and fifth year, but may not pierce the gums for several years later, and in some instances remain covered with the gum through life.

According to location and size they may also be divided into two classes:—

1. Those contiguous to the molar, usually large and well developed.
2. Those remote from the molar, usually small in size or rudimentary in structure.

The former are the best developed of all wolf-teeth. Whether they belong to the wolf-teeth of temporary dentition, and remain unmolested by eruption of the first molar, or erupt after this event has taken place, they always possess the distinctive features of mammalian teeth. They have firm alveolar walls, are surrounded by an alveolo-dental periosteum, and in many ways ably represent their predecessors. Their development seems to be greatly augmented by the influence of the first molar.

The latter (second class) are the most rudimentary of wolf-teeth, whether they appear during temporary or permanent dentition. They often remain covered by the gums, lose all dentinal qualities, and become incorporated with the maxilla. Even those whose fangs grow sufficiently to force the crown through the gums are deficient in structure, and soon succumb to external influences.

Further research into their anatomical peculiarities, morphological characteristics, and their evolution tends to confirm the belief that they are retrogressive dentinal structures which will under suitable conditions become extinct.

Along these lines the effects of domestication, breeding, mode of life, and habits upon their size, frequency, and development should be noted. The wild horse, the broncho of the American plains, and the poorly-bred domestic horse have large, well-developed ones, possessing all the characteristics of typical mammalian teeth, while the finer breeds—the American trotter, the English hunter, the thoroughbred, and the larger breeds of draught-horse—have relatively small and rudimentary ones, often lacking a normal arrangement of the fundamental dental substances. In the former they are often actively concerned in mastication, while in the latter they usually succumb to external influences at an early age.

Confronted with this evidence, obtained by extensive observation, it would first appear that the doctrine of "natural selection" is not applicable to their retrogression, as all the influences which would naturally be expected to favour development, instead of degeneration, are exerted in the finer breeds; but when the variation in the quantity, quality, and texture of the food masticated by each is considered the soundness of the deduction becomes apparent.

Research as to their frequency in the different breeds is rather disappointing as compared with the other variations, yet they are somewhat more prevalent on the coarser breeds.

It is a matter of common observation that they are undergoing a "process of disappearance" in our modern well-bred horse, and are only retained upon the scene by the stubborn influence of heredity, and if the law of "natural selection" is applicable to their retrogression—and it no doubt is—its influence upon them is no less remarkable than the persistence with which they retain their identity after generations of disuse and uselessness to their possessors.

It cannot be disputed that there is a perceptible tendency toward enlargement of the diastema as breeds improve, and that the inferior maxilla—the seat of the bit—is no longer a common location for these teeth. It is, therefore, only reasonable to suppose that the "adaptive" influence of "natural selection" is instrumental in "clearing up" the interdental space or offensive agents.

Their effect upon the eyes.—Among the laity the impression that wolf-teeth exert an evil influence upon the eyes is well established, while veterinarians hold somewhat varied opinions. The majority, however, are disinclined to entertain such views, or else dismiss the matter as unimportant. It must be admitted that if any relation exists between these organs and the visionary apparatus it is only remarkable for its remoteness. Yet the subject has been sufficiently agitated to warrant brief notice.

Along this line a number of theories have been advanced:—

1. That the fang of the wolf-tooth infringes upon the supradental branch of the trigemini, and reflexly affects the organ of vision.
2. That "weeping-eyes" may be due to occlusion of the lachrymal conduit caused by eruption of wolf-teeth.
3. That irritations or catarrhal conditions incidental to their eruption affect the eyes by continuity of tissue.

It is readily seen that these deductions are of no value, however plausible they may seem from casual investigation. It would indeed require an elastic imagination to depict an extensive conjunctivitis caused by irritation of the dental nerve. The other two, in fact all these theories, are exploded by the fact that wolf-teeth erupt without any amount of irritation. They have never been observed to occasion any visible disturbance to the surrounding tissues. And, again, to argue that the circumscribed counter-irritation produced by their extraction could benefit an ocular disease is too speculative, if not entirely beyond reason.

The abortion of ocular phlegmasia following their extraction must be regarded as a mere coincident, or at least be viewed from an empirical standpoint until some substantial argument is advanced which will implicate them in the causation of such diseases.

Treatment.—Being the rudiments of normal structures, never diseased, and, as far as observation goes, do not augment or cause disease of any character, it may seem inconsistent to prescribe surgical treatment for them. Yet for the following reasons their universal extraction should be recommended, viz.:—

1. To free the interdental space of offensive agents. Their location and

unstable implantation render them susceptible to mechanical injury, and their crowns may cause abrasions of the buccal membrane. They thus interfere with mastication, and often are productive of disagreeable driving-habits, such as unilateral pulling, frothing, nervousness, etc. The necessity of obviating and palliating such habits cannot be over-estimated among highly bred, nervous animals, as their affability so largely depends upon a complacent acceptance of the bit.

2. To accede to the demands of an anxious client. And besides, during the treatment of ocular disease, the strategical veterinarian will never fail to recommend their extraction.

Modus Operandi.—The operation of extracting wolf-teeth, seemingly too simple to warrant attention, is one of those many small matters by which a practitioner's gross ability is often measured, and from this standpoint alone should obtain more than passing notice from the circumspect veterinarian.

Like in the extraction of any tooth, the process requires the application of pressure, torsion, and outward force simultaneously and dexterously combined, and beside the operator must be mindful of the possible interference of the movable inferior maxilla. The amount of pressure and torsion must be measured by the stability of the tooth's substance, while the outward force must necessarily equal the firmness of its implantation.

In the case of the better developed ones, the operator assumes a position on the opposite side of the head. The hand containing the forceps is passed beneath the inferior maxilla to the side containing the tooth. In this position the tooth is grasped as near the neck as possible with the forceps forming a right angle with the long axis of the upper jaw. The instrument is held rigid to limit the outward motion of the lower jaw, then, with the proper application of pressure, torsion, and outward force, extraction is usually successful.

The rudimentary ones and those remote from the molars are best extracted by first disturbing the alveolar walls with a sharp separating-forceps before applying the regulation wolf-tooth instrument. Even in the case of well-developed ones the separating-forceps is valuable to render extraction certain. The tooth is loosened by forcing their edges between the molar and the wolf-tooth, then the regular forceps is applied, with success.

Fracture during extraction, while very common, is not usually serious from the practitioner's point of view, as the embedded part will soon become covered with the gum.

Summary.—The following are a few deductions made from a study of these interesting structures, viz. :—

1. That wolf-teeth represent the four anterior premolars (two superior and two inferior) of extinct genera, followed by an almost unbroken chain, from genera of the tertiary period through successive ages to the present horse.
2. That their retrogression is identical with that of the wisdom-teeth of man, which are undergoing the same process of degeneration in the more highly civilized races.
3. That they are retrogressing in the modern horse in accordance with the doctrine of natural selection.
4. That their retrogression is discernibly within the scope of modern observation.
5. That the theories that they are the result of accidental dentition (supernumerary), or of hyperdentinal development (supplementary), is not worthy of serious thought.
6. That they should be included in the category of normal structures,

the same as the wisdom-tooth is included in the formula of human dentition.

7. That they are not etiological factors in diseases of the eyes, but may interfere with mastication and cause disagreeable driving-habits.
8. That they are less frequent and more rudimentary in the finer breeds.
9. That their development in size and structure depends upon their contiguity to the molar.
10. That their universal extraction should be practised by the veterinarian.—*The Journal of Comparative Medicine and Veterinary Archives.*

Legal News.

DOG POISONING AT LINLITHGOW.

At the Linlithgow Sheriff Court recently proof was led in a case at the instance of William Meikle, farmer, East Bonhard, Linlithgow, against John Meikle, farmer, Grougfoot, Linlithgow, concluding for £12 in respect of the death of two collie dogs. Pursuer's farm marches with the defender's farm, and on the 12th January last pursuer's dogs were running in a field next to one of defender's. They disappeared for half an hour, being last seen going through a small plantation which divides the two fields in question. On returning home they showed symptoms of poisoning, and shortly thereafter died. The following morning an examination was made of the Grougfoot field in the direction of which the dogs had been seen to go, and there a dead sheep was fouud. The carcase was taken possession of and examined along with the stomach of one of the dogs by Professor Ivison Macadam, Edinburgh, who certified that the dog had died of strychnine poisoning, while the carcase was smeared with that poison. A long proof was heard, from which it appeared that the defender had been in the habit of using strychnine mixed with grain and strewn amongst potatoes, also that dead foxes had been found on his farm and in the neighbourhood thereof, and that his last purchase of strychnine was one ounce in July last, while the sheep had been allowed to lie for ten days and had never been lifted. The defender pleaded that while it was his sheep that was lying dead on his land, he had been ill at the time it died, and he understood that it had not been lifted and skinned because of its hide having been torn when found; that while he admitted buying strychnine and having it at the time of the dogs being poisoned, he was not aware how the sheep had become smeared with strychnine, and had had no hand therein. Sheriff Macleod, at the close of the evidence, remarked upon the case being a strong one from a circumstantial point of view, and took it to avizandum. The sheriff issued an interlocutor in the case yesterday. He finds (1) That defender's dead sheep was smeared with poison in order that it might perchance work out the destruction of its own destroyers. (2) That it was smeared with poison while it lay dead in the defender's field. (3) That it was smeared with poison by someone who wished to benefit the defender. (4) That the pursuer's two dogs died from eating meat poisoned with the same poison with which the defender's dead sheep had been smeared. (5) That some living animals had been devouring the poisoned carcase of defender's sheep about the very time when these two dogs were eating what caused their death. (6) That these two dogs were in the immediate neighbourhood of the poisoned carcase of defender's sheep when they set out in his direction to eat what caused their death. These, as I have said, are very strong links. But then the strength

of a chain is as the strength of its weakest link, and here is at least one link not strong enough for the purpose. If the defender caused to be smeared with poison the carcase of his sheep, there was an adequate motive for his doing so, and he had the poison and the opportunity. It is not necessary for me to consider whether from the circumstantial evidence led I could safely conclude that the defender instructed that the carcase of his sheep should be smeared with poison, or that this was done with his knowledge and approval. Pursuer must satisfy me that pursuer's dogs ate of the defender's sheep. He succeeded in proving that on the day after the dogs were poisoned, marks of recent devouring were seen on the sheep's carcase. But that takes him a very little way, for it may have been done by other animals. This was a fatal weakness in the chain. There will, therefore, be judgment for the defender, but without expenses.—*Scotsman*, June 8th.

AN EDINBURGH HORSE SELLING CASE.

At a sitting of the Justiciary Appeal Court to-day—the Lord Justice-General and Lords Adam and Kinnear on the bench—decision was given in the bill of suspension presented by John Turnbull, jobbing post-master, Selkirk, craving the suspension of a sentence passed on him in the Edinburgh Sheriff Criminal Court by Sheriff Maconochie, finding him guilty of having pretended to Messrs. John Croall & Sons (Limited), Royal Horse Bazaar, Edinburgh, that three horses which he sent to them for sale by auction were the property of a Berwickshire gentleman, and did thus induce the Messrs. Croall to insert the three horses in their sale catalogue in terms of the description so given, and to offer them to sale accordingly, and this the accused did for the purpose of inducing competition for the horses and of obtaining higher prices for them at the sale. The complainer stated that it was proved at the trial of the case that three of the purchasers knew within half an hour of the sale that the horses though entered in the name of a Berwickshire gentleman were really the property of the suspender; and that the other purchaser was told this on the following day; that all the purchasers knew that they might have returned the horses to Messrs. Croall within two days of sale if they had been dissatisfied with them, but they all elected not to do so; that it was a common practice for horses to be entered in the catalogue under assumed names for the owners; and that no evidence was led to support any of the alleged innuendoes in the complaint. He pleaded that the complaint was incompetent.

The court to-day sustained the conviction, on the authority of a decision in a similar case of Hood *versus* Young.—*Edinburgh Dispatch*, Saturday, June 11th.

Extracts from Foreign Journals.

TUBERCULOSIS IN CATTLE.

At the International Congress for Hygiene, held in Madrid lately, Professor Behring delivered an address which attracted much attention, the subject being a new serum discovered by him for the *cure* of tuberculosis. After emphasising the fact that the discovery of tuberculin by Koch was by far the greatest scientific discovery in this direction, and had served as a basis for all subsequent discoveries, he described his own experiments of the past few years, which had led, through elaborate treatment of the poisonous matter,

to the production of a substance which is twenty times as poisonous as the tubercle bacilli themselves, and, as had been proved experimentally, is the tuberculosis virus proper. This substance is 80 to 100 times more efficacious than Tuberculinum Kochii (in which it is, of course, likewise contained). With this virus Professor Behring had immunised certain animals, and from them had obtained a serum which not only—as experiments on guinea-pigs had shown—protects against tuberculosis infection or inoculation, but, when administered in slowly increasing doses, *cures* tuberculosis in cattle. Professor Behring stated that at the Veterinary College in Berlin, experiments had been made with this cure for tuberculosis in cattle on a great scale, and that these had had the support of the State.

Unfortunately, this serum obtained from the lower animals cannot be administered to the human subject, as even in small doses it produces most unpleasant concomitant effects. These effects are not, as has been proved by experiment, the product of the antitoxin, but of the animal serum itself. And yet, apparently, this serum produces these effects only on tuberculous patients, on whom, as has been shown, diphtheritic cure-serum works in the same way, and it, we know, is quite harmless to non-tuberculous children. For the cure of phthisis in the human subject, therefore, even by this important discovery the road has not been opened up.—*Berliner Thierärztliche Wochensch.*

ACUTE FLATULENCE IN RUMINANTS FROM THE POINT OF VIEW OF MEAT INSPECTION.

On the occasion of the despatch to Paris of a great quantity of meat from bovine animals attacked by flatulence while grazing, and either dying therefrom, or slaughtered while dying, M. Villain fully justifies the seizure of such meat. The lesions noticed by the skilful inspector-in-chief of the Paris meat supply, especially in seven cows slaughtered in the course of a serious attack of flatulence, were considerable. They existed principally in the thighs and under the shoulders, muscular discolouration and infiltrations; sero-sanguinolent serosity, produced abundantly after a deep incision into the thickness of the thigh; feverish odour, excrementitial in the neighbourhood of the peritoneum; serous and livid; fat and ganglia injected; all the lesions, in short, of fevered meat or diseased meat.

The animals whose carcases were seized formed part of a herd of 60 beasts which had got into a field of clover. This important seizure would certainly not have been effected if the cows had been slaughtered sooner, at the beginning of the accident. M. Villain notes particularly that when a sound animal succumbs suddenly, the agents of putrefaction exist only on the surface of the skin, and in the great cavities of the body in contact with the outer air, especially in the digestive tube. It is, then, the microbes of the intestine that begin the work of destruction by attacking more or less rapidly the various parts of the body. What is true for meat coming from animals that have died, is equally true for the flesh of subjects slaughtered in the course of an acute malady. "One must not," so M. Villain expresses himself—and it is a rigorous principle which must be impressed upon the masses—"consume the flesh of animals found to have died a natural death, even when these are rabbits, poultry, or game. The invasion of the tissues by the microbes coming from the intestines is rapid in dead animals; the toxines appear shortly after death, rendering the meat excessively dangerous in certain cases. Every animal that has died naturally ought rightly to be seized. That is the absolute rule in our slaughter-houses." The principle of the seizure of all *dead meat*, that is to say, of every animal that has died a

natural death, has always been applied in the abattoirs of our country, as in those of Paris. It has only been departed from since the ministerial resolution of the 25th July, 1894. The ministerial circular explanatory of this resolution justifies the exclusion of animals dying naturally from the list of those which entail rejection of the meat by the following consideration:—"The meat of these animals is not always unfit for food; this is the case, for example, when the animal has succumbed to an internal hæmorrhage, which causes accidental death, properly speaking, or to asphyxia, or to a cerebral or pulmonary congestion or congestion of the spinal marrow." We fear greatly this toleration on the part of the Administration leads to abuses. As regards this fear, we find our principal justification for it in the very enumeration of the examples cited by the circular. We have made it a constant rule never to make a public criticism of the official acts relating to our course. And so let us limit ourselves to expressing the hope that we may see re-established seizure of meat in all cases whatsoever of death following on disease.—*Revue de Ther. Med. Chir.*

PULMONARY TUBERCULOSIS OF THE HORSE.

MM. Cadéac and Morot have had the opportunity of observing pulmonary tuberculosis in two horses. In both cases the lesions were identical. The lung was shown with innumerable tubercles, firm, hard, absolutely white or slightly grey, well marked, of the size of a grain of millet or of a hempseed. These nodules stood out slightly under the pleura, which was transparent, smooth, and slightly thickened in places. When the worn-out lung was pressed between the fingers, the tubercles gave the sensation of numerous little grains of sand; they were, besides, spread all over the thickness of the pulmonary parenchyma. The smallest of these tubercles could be easily cut up by the cutting instrument; they could be crushed with ease on a sheet of glass, though the centre was more resistant than the periphery. The biggest, on the other hand, were very hard, crackled under the scalpel, and could not be completely crushed; there existed a central focus of calcification seen simply through the pleura; these tubercles might be confounded with translucid tubercles, like those which one meets with in glanders; but on section, differentiation was easy. Nowhere were found the three zones typical of the glanderous tubercle. Further, the trachea was whole throughout all its extent, the bronchial ganglia were hypertrophied and softened, but there existed neither glandular swellings, nor lesions of the nasal cavities. Microscopic examination of these tubercles gave results of small significance, but inoculation into two guinea-pigs set up tuberculosis in both cases.

The horses which had provided this tuberculosis seed had doubtless for a long time resisted the malady, a fact to which the oldness of the lesions they had presented gave witness. Were they, perhaps, in process of being cured? Tuberculosis may without doubt retrograde in animals, as it has been observed to do in man.—(*Journal de Med. Vét. de Lyon*).

VOLVULUS IN A HORSE. RUPTURE OF THE STOMACH. *POST MORTEM.*

On autopsy of a horse that had died of colic, M. Lesbre ascertained that several ansæ of the small intestine, those situated a few mètres from the valvule of Banhin, were pushed back under the pelvic curve. The part of the mesentery leading into this portion of the intestine, estimated at 3 mètres

long, was twisted from front to back, and from left to right; it formed a tight string of about 50 centimètres in length, causing a manifest uneasiness in the circulation of this region. Under the diaphragmatic curve of the great colon, was found a small quantity of alimentary substances that had overflowed from the stomach, which was still full of food without being distended. This bowel showed on its anterior face a tear, 17 centimètres long and five broad. The tear of the muscular membrane was 4 centimètres longer at its extremities than that of the mucous; its edges were jagged without any trace of congestion or ecchymoses, characteristic features of a rupture *post mortem*, of which the repletion of the stomach and the considerable swelling up of the dead body had been the mechanical causes.

The co-existence of these lesions might be of such a nature as to sometimes engender errors which a minute *post-mortem* examination will always help us to avoid.—(*Ibidem.*)

ROUMANIAN METHOD OF TREATMENT OF RABIES.

Professor Bates has modified to a great extent the classic Pasteur treatment; he uses organic liquids got from an animal immunised against the infectious disease, these liquids possessing a preventive and curative action, and he utilises rabic virus which has either been attenuated, or even killed, by heat. In 1888 Bates showed that dogs vaccinated on different occasions, by means of great quantities of rabic virus, possess a blood which is endowed with properties preventive and curative for dogs infected with rabic virus. In 1890 the blood of the vaccinated dogs was utilised, in doses of 50 grammes a day, to prevent the appearance of rabies in some men who had been bitten in the face by rabid wolves. The twelve cases treated were all cured, whilst of four patients treated in the classic method, four succumbed. From this time onwards the Roumanian procedure was applied to the severest cases in which the disease appears often less than fifteen days after the bite, whereas the classic treatment has to be employed for fourteen days before producing any effect whatsoever. In 1896 a few asses and a few sheep were immunised by means of increasing doses of dog's blood. The whole blood of the asses and sheep became very active; the serum (especially after precipitation of the globules by oxide of zinc) was found to be still more active than the totality of the blood. The serum of the immunised human subject is more active still, and certain breeds of dogs are preferable to others. In order to obtain ass-serum containing a maximum of therapeutic effect, we must inject into the animal in the course of a number of years increasing doses of fixed virus; if the mixture of rabic serum and fixed virus is inefficacious, the serum must be employed at the beginning of the treatment (which allows of the classic treatment being afterwards started with large doses). The serum is injected in only grave cases in patients undergoing treatment in the first few days after the bite. For cases in which treatment is late in beginning, a much more active vaccine or serum is needed. By heating to 58° cent. an emulsion of rabic medulla for a longer or shorter time, a series of more or less attenuated viruses may be obtained, which have the advantage of resisting decomposition; such is not the case with a great number of medulla submitted to desiccation by the classic process. It goes without saying that all these statements are the outcome of numerous comparative experiments which have allowed the author to fix his method decisively in the following manner:—

Slight cases.—1st. Emulsion of medulla desiccated in antirabic toxines, which have been filtered and heated to 75°; 2nd. Series of desiccated medullæ, emulsioned in a filtered virus which is at the limit of virulence;

3rd. A series of medullæ emulsioned in a virus of a virulence sufficiently marked to kill a rabbit in ten or twelve days.

Grave cases.—These series should be shortened, and there should be added a series of filtered virus with a virulence for nine to ten days.

To sum up, the Roumanian method has introduced the following processes into the treatment of rabies:—1. Serotherapia; 2. Use of a medulla emulsion heated just to the point of destruction of the virus, this emulsion serving to incorporate the fragments of desiccated medulla (Puscarni, at Jassy, uses this procedure for all the cases he has to treat); 3. Combination of the treatment by medulla with the use of medulla attenuated by heat.—*Revue de ther. med.-chir.*

HEMOGLOBINHEMIA AND ITS CONSEQUENCES. INSUFFICIENCY OF THE PULMONARY ARTERY.

An Anglo-Norman gelding, seven years old, vigorous and plethoric, had for three years shown all the signs of perfect health, when, on the 4th August, 1896, at about 8 o'clock in the morning, it was found in the stable covered with sweat, and resting on its hind quarters. A few instants afterwards, the animal was lying on its right side with a fast and very strong pulse, dilated nostrils, and strongly agitated flank. The excitations usually employed to cause standing upright caused useless efforts, without giving the result desired. Bleeding was performed, appropriate treatment applied, and after it rose again, which took place about 10 in the morning, paresis of the off hind leg was discovered. The urine passed on two different occasions in sufficiently abundant quantity was of a clear coffee colour. At 3 o'clock in the afternoon calm had completely returned, and following on a rest, lying down, of two hours, the animal began to eat straw. The improvement continued to evince itself on the days following, and the animal was in a fit state to put out to grass till the beginning of October. On its return, it was noted, when the animal was put to work, that it was soft and easily became breathless. This state, at first attributed to want of spirits, only went on getting worse, and on the 8th, after work, a very plentiful bleeding at the nose (about 2 litres, or 3½ pints) took place on its re-entering the stable. From this time onward it was impossible to utilise the animal. In its state of repose, its general condition seemed perfect, its appetite was excellent, respiration regular, and the beatings of the heart though feeble were without intermittence. When it was taken out for exercise, at the end of 4 kilomètres at most the horse was quite unable to continue its journey and the whip had to be applied to make it advance a few steps. The head was lowered, the skin covered with sweat; the dilatations of the nostrils and the quickness of the respiration were signs of severe dyspnœa, sometimes accompanied by epistaxis. Venous pulse existed in the jugular veins and the cardiac beatings felt by the hand placed behind the left shoulder were of extreme violence. Auscultation enabled the beats of the heart, very much strengthened, to be heard in the whole expanse of the chest.

The horse was sent to a stable, where we had the opportunity of seeing it again in the month of December. The breathlessness was at this time still easier to produce than before, and a few score mètres' trot was sufficient to transform the succession of heart-beats into a veritable rumbling. In the state of repose, the pulse was found to be a little weak (40 to 45), the heart-beats equally feeble, and the second beat being followed by a kind of "whine," recalling, with a slightly deeper note, the rattle of pulmonary emphysema in small dogs. This whining being heard immediately after the sigmoidal rattling, indicated in the clearest possible manner the existence of

an insufficiency of one of the aortic or pulmonary orifices. The pathological sound, which was too weak to cover the rattling, became perceptible only when the latter ceased. This fact ascertained, it remained to determine the injured arterial orifice: if, on the one hand, the pulse characteristic of aortic insufficiency was weak, on the other hand, the rarity of the pulmonary insufficiency made us hesitate to settle the diagnosis of this last injury. Further, considering the frequency of the lesions of insufficiency of the aorta, it was possible that we might be dealing with one of those lesions badly characterised from the clinical point of view. This latter opinion seemed to us the more probable, and we were proposing to try to completely enlighten ourselves by a new examination with the help of the stethoscope, when we learned that the animal had been found dead in its box one morning early in January, 1897.

Autopsy.—Lungs congested. The pericardium contained a little reddish liquid. The heart, which was hypertrophied, weighed 5 kilos (11 lbs.); the right ventricle was extremely dilated; the mitral valve was red and thickened on the free border. The aortic sigmoid valves were of the same colour and likewise slightly thickened. The pulmonary sigmoids were reddish, and showed no injury, either in the way of shape or size, but the pulmonary artery was so dilated that the fist could be introduced into it. There was evidently insufficiency. The aorta could be dilacerated much more easily than in its normal state; its serous, which had a polished and smooth appearance, was thicker than usual, could be easily detached, and was of a *pale citron-yellow colour as far as the lumbar region.* The pulmonary artery showed similar but less accentuated lesions, which seemed to be connected with fatty degeneration. The liver was discoloured, and gave a section of a yellowish gray. It corresponded by the dilation of the lobular veins to the nutmeg type; some parts of it were thickened, others were harder and the seat of the commencement of cirrhosis, a lesion which we were able to determine by aid of the microscope; each lobule was surrounded by a pretty thick conjunctiva ring. The kidneys were so soft and friable that it was difficult to cut them up in any way whatever. The cortical region was very much discoloured; the medullary region was almost black. These organs, which slipped about in the hand like a lump of hot fat, were in a state of extraordinary disorder.

This observation seemed interesting for several reasons, first, because pulmonary insufficiency in the horse is considered a clinical rarity; secondly, because the chronic disorders noticed in different organs inform us of a cause never before mentioned, as far as our knowledge goes; we mean hemoglobinhemia. Why, in the case of our patient, did an attack of this illness, an attack which seemed slight, and in lesions so grave when in other animals much more seriously attacked the malady leaves no appreciable traces? We do not know. What we affirm is that the subject of this observation was an extraordinary vigorous animal, known to us for three years, and which a few months sufficed not only to render a useless animal, but also a dead one. The etiology in question has, besides, nothing surprising for one who remembers the manifold disorders of the heart, muscles, liver, and kidneys, which are met with on autopsy of animals that have died from hemoglobinhemia.

To conclude, we would call attention to a fact which is of interest, the production of the "whining" sound; if in the majority of cases this noise is produced by the vibrations of pedicellate growths or tendonous fibres detached from the ventricular wall, there are others in which the vibrations of a healthy valve may cause its production. This fact has been well demonstrated by Professor Chauveau in his researches on the production of musical sounds. Indeed, this investigator has succeeded in producing and causing

to disappear at will a whining sound, by plucking with a small crooked pin the edge of the valve of the jugular of the horse. When the valve floated in the current of the blood, thanks to its being attached to the pin, the musical sound could be heard; when applied, however, to the wall of the vessel, the whining disappeared. The fact of pulmonary insufficiency without injury of the valve seemed to us a confirmation of the experimental facts collected by Professor Chauveau.—(*Recueil Vétérinaire.*)

A CURIOUS CASE OF BOVINE MELANOSIS.

Veterinarians who are meat-inspectors have seldom the opportunity of observing generalised melanosis in the bovine species. Everyone knows that this disease is peculiar to old white horses, and so I think my colleagues will read with curiosity and interest an account of the lesions observed in a milch cow which was slaughtered for the butchérs and found to be affected with generalised melanosis.

The cow in question was a native of this country (Belgium), black and white, eight years old; its owner had owned the animal for five months, and it was according to him the best milker in his byre. The cow was besides in good condition, fat even, weighed 420 lbs. and was sold for sixpence the kilo. net. The butcher on removing the skin, discovered in the dorsal and scapular regions the presence of great stretches of extremely black blotches, even in the thickness of the integument. These patches corresponded on the outside to white portions of the coat; the underlying cellular tissue, as well as the adherent superficial flesh, was also of a blackish colour strongly marked. In his fright the butcher thought that he had a cow affected with anthrax; he came immediately to me to ask me to come and see it as soon as possible. On arriving at his slaughter-house, what struck me at once was the general aspect of the slaughtered animal. The flesh, which had a fine appearance, showed in places black irregular patches of variable length. The butcher immediately drew my attention to more clearly marked lesions of the liver and of the spinal cord, and I concluded that it was a case of well-marked melanosis. From the brain to the sacral region, the envelopes of the cord were entirely closed up, forming, as it were, a thick skin of a blueish colour, causing the whole to resemble a long dissected jugular vein filled with an injection as for studying the venous system, such as in a veterinary school. In the interior of this skin the colour darkened and became entirely and deeply black. The very tissue of the medulla was black and shining, covered with a gelatinous varnish, which stained the fingers deeply, exactly like blacking diluted in a little water. When incised, the medulla was found to be affected in a portion of its thickness, and there was a long strip, a millimètre thick, completely enveloping the medullary cord. There were the same colorations on the posterior aorta, outside only, the interior having none. In the digestive apparatus the melanotic lesions were typical, especially in the liver and in the pancreas. In the rumen were found black granulations, not very numerous, but well characterised on incision of the fleshy pillars or knots. The appearance and size of the liver were normal. On its external aspect was an irregular tumour covered with knobs, and of the size of an orange. Other smaller tumours, well-rounded, like walnuts or hazel nuts, were met with in the thickness of the organ. All were enclosed in a cellulo-fibrous sheath, and were independent of the substance proper of the liver. All, too, were of an intensely black colour, and of a pretty strong consistence, which resisted pressure of the finger. These lumps were identical with those which may often be seen at the base of the tail of

aged grey horses. The pancreas was quite black, and its tissue was totally transformed. From its centre stretched out black rays which were at last lost in the surrounding fat. In the latter, from time to time small bluish patches were met with. The ganglionary system showed nothing in particular. The mediastinal and mesenteric ganglia in the direction of the great oxis showed some granulations of varying intensity. The spleen had small, black spots scattered over the surface of its tissue. Near the base was a nodosity of the size of a hazel-nut, independent of the organic tissue. The lungs were completely sound and without a trace of any lesion whatsoever. The heart had its ordinary external aspect; the endocardium, which was browner than is usual, showed two blackish patches which were of fair extent, and partly affected the tissue proper of the heart. The capsule of the kidney alone was of a well-marked black; the renal tissue showed nothing abnormal. The osseous system showed some lesions of melanitic infiltration. The 5th, 7th, and 8th left ribs were black, showing in relief by their colour against the whitish colour of the whole. The 9th right rib showed the same peculiarity. The vertebræ corresponding to these bones, especially near the rochidian canal, were of an inky black, principally the spongy tissue.

The proprietor maintained that his cow was sound, and that he had decided to call in another expert if I rejected the animal. On the other hand, the butcher would not have it at any price. With the consent of the parties concerned and of the burgomaster, I telegraphed to M. Dehaye, provincial inspector, who came at once at my request. We had the quarters of the animal cut up. The flesh was of a too bright red when exposed to the light, and looked like strongly salted ham. The whole of the ileo-spinal, as well as the muscles of the second dorso-lumbar layer, showed in their tissue characteristic black portions. Further, the flesh had quite a pronounced smell of fever. We declared it unfit for consumption, to the great annoyance of the owner, who in his anger wished to have yet another expert's opinion. I represented to him the futility of the thing, and, finally, the cow was petrolised and sent to a tanyard.—(H. GUSBIN in the *Echo Vétérinaire.*)

POWDERED SOAP AS A CAUSE OF DEATH AMONG SWILL-FED HOGS.

It is a common experience of those who are engaged in the investigation of animal diseases to occasionally find outbreaks of a peculiar nature among swill-fed hogs. By these are meant herds of greater or less size, usually kept near or within the outskirts of our villages or small cities, and which are fed upon the kitchen refuse, often including the dishwater, collected from hotels, boarding-houses, and private dwellings. The cause of death in these outbreaks is, in this state, at least, usually attributed to hog-cholera. The basis for this popular diagnosis seems to be in the similarity of certain of the symptoms manifested by these animals to those of hog-cholera, such, for example, as diarrhœa and partial paralysis, and a fact that a majority of those attacked die. The course of the disease is irregular, deaths occurring in from a few hours to several days after the symptoms appear.

During the past year I have had occasion to make investigations into the nature of several of these outbreaks of a supposedly infectious disease. In a few of these epizoötics hog-cholera or swine-plague was easily demonstrated. In certain others, however, these or other infectious diseases could not be found. The animals were usually fed on the kitchen slops collected from hotels and boarding-houses. The tissue changes in the animals examined were typical of no known disease, and notwithstanding the

bacteriological examinations which were made, together with animal inoculations with pieces of the diseased organs, the cause of death remained undetermined. The *post-mortem* examinations showed in nearly all of these animals enlarged and dark-coloured lymphatic glands, especially those of the mesentery. The blood vessels of the mesentery were very much distended with blood. The liver and kidneys were usually not affected, but occasionally these organs were involved. Where there had been marked nervous symptoms the brain was much congested. Occasionally the lungs contained areas of collapse. As a rule the intestines were pale, and the mucous membrane seemed to be abnormally shiny.

The negative outcome of these investigations suggested that possibly our methods had been faulty or that some unknown conditions existed which had obscured the cause of death, and that, after all, the popular diagnosis of an infectious disease was right. Against this theory was the fact that the disease did not spread from the affected herds to others, although, as a rule, precautions were not taken to prevent its dissemination, and in some instances the neighbouring herds were most favourably situated for contracting the disease if it had been contagious. In certain of the outbreaks the exceedingly filthy condition in which the pens and yards were kept suggested, in the absence of a knowledge of definite specific agents, that the animals had died as a result of their unsanitary surroundings and unwholesome food, a hypothesis which in some instances is still entertained as being highly probable. However, we were still confronted with the problem that in many outbreaks neither a specific infectious disease could be found nor the exciting cause of death pointed out.

Although it was apparent that the cause of the deaths was to be found in the food, the feeders of this kind of swill failed to see why they should discontinue its use. Naturally they felt that if we could not find or demonstrate the presence of the destructive agent in the swill the cause of death must be something else, probably hog-cholera, for thousands of hogs are annually raised upon this kind of food. Further, the plea that such garbage was not a suitable or even wholesome food for their animals availed nothing, for the reply was that usually their pigs thrived upon it.

Early in the summer, in conversation on this subject with Mr. W. F. Davey, an enterprising farmer living near Brewerton, N.Y., he related the circumstances concerning an outbreak of this kind, in which he had traced the cause of the trouble to the soap used in washing the dishes. The swill, including the dishwater, was collected from three small hotels and fed to a herd of swine. In a short time the animals began to sicken, and many oi them died. Upon inquiry it was found that in the hotels large quantities of powdered soap were used in washing the dishes. This was stopped, and no more animals died. Later in the season Dr. J. A. McCrank, of Plattsburg, told me of an outbreak of an apparently infectious disease among swine which had come under his observation, and in which he could not make a positive diagnosis. In the investigation of its cause, he found that the hogs were being fed on the swill, including the dishwater, from a hotel. Upon inquiry he found that powdered soap was being used in large quantities. The swill from this place was stopped, and the disease disappeared.

In following up the line of inquiry which these experiences suggested, it was found that there is among the more enterprising farmers a quite general belief that these soaps, when given in considerable quantities, are injurious and even fatal to hogs. The consensus of opinion on this subject, together with the more definite observations of Mr. Davey and Dr. McCrank, appeared to be so conclusive that it seemed important to determine by careful experiment to what extent, if at all, powdered soaps can be considered as the cause of death in this class of outbreaks. To this end the

experiment about to be described was carried out. It shows that when certain of the powdered soaps sold in the market are present in the food in relatively large quantities, a considerable percentage of the animals will sicken and many of them will die.

When, however, the soaps are added to the food in small quantities (a dessertspoonful in the food for three pigs, twice dally) no bad effects seem to follow. The cause of death when it does occur is probably due, as shown by the chemical analyses, to the free alkali, sodium carbonate, or washing-soda, which they contain.

Experiment in Feeding Powdered Soaps to Pigs.

In the experiment three of the commonly-used powdered soaps were selected. They are here designated as soaps A, B, and C. Nine pigs, weighing about twenty pounds each, were taken. They were given their regular food, grain mixed in water, and some separator-milk. To this was added a definite quantity of the soaps, which were dissolved and thoroughly mixed in the food twice daily.

Soap A.—*July 10th.* Pigs Nos. 1, 2, and 3 were placed in pen No. 1. They were given, night and morning, regular rations as previously described, to which were added 2 ounces of soap A.

14th. Pigs well. Quantity of soap given increased to 4 ounces.

18th. Pig No. 1 has profuse diarrhœa, others well.

20th. Pig No. 1 has diarrhœa; at times it runs about the pen in apparently a dazed condition.

24th. Pigs Nos. 1 and 2 have bad diarrhœa. Quantity of soap given reduced to 1 ounce.

August 1st. Pigs appear to be well.

7th. Quantity of soap increased to 5 ounces.

8th. Pigs sick; all have diarrhœa; do not eat; have some difficulty in walking.

9th. Pigs appear to be no better.

11th. Pigs still sick; have eaten very little. Soap stopped.

12th. Pigs slightly better.

15th. The condition of the pigs is much improved.

18th. Animals apparently well.

The feeding of this soap was repeated on these animals some weeks later with a similar result.

Soap B.—*July 10th.* Pigs Nos. 4, 5, and 6 were placed in pen No. 2. They were fed the regular rations to which were added, morning and evening, 2 ounces of soap B.

14th. Pig No. 4 has a bad diarrhœa; others well. Quantity of soap given increased to 4 ounces.

15th. All three have a diarrhœa.

19th. Pig No. 4 found dead. No. 5 very sick, unable to stand, refuses food.

20th. Pig No. 5 cannot stand, limbs constantly jerking; there seems to be paralysis; it dies late in the afternoon. Pig No. 6 has suffered from diarrhœa, but otherwise seems to be well, although it eats very little. Quantity of soap reduced to $\frac{1}{2}$ ounce.

22nd. Pig No. 6 better.

August 1st. Pig No. 6 much improved. Soap discontinued.

Soap C.—*July 10th.* Pigs Nos. 7, 8, and 9 were placed in pen No. 3. They were fed the same as the others. Night and morning, 2 ounces of soap C were mixed with their food.

13th. All the pigs have diarrhœa; eat very little.

14th. Quantity of soap reduced to 1 ounce.

16th. Pigs very sick; eat very little; head jerks constantly; limbs tremble; temperature 103·5°, 104°, 103·8° F.

18th. Pig No. 7 dies suddenly to-day; others still sick. Pig No. 8 has much difficulty in standing; lies with feet extended, legs and head are constantly jerking. No. 9 has diarrhœa, eats little, but otherwise appears to be well.

19th. Pig No. 8 found dead this morning. No. 9 seems to be better.

20th. Pig No. 9 eats heartily; appears to be quite well.

Three other pigs, Nos. 10, 11, and 12 from the same lot, were placed in pen No. 3 with pig No. 9. They were given ½ ounce of soap C, thoroughly mixed with their food, twice daily.

25th. Pigs apparently well.

August 1st. Pigs apparently well.

17th. Pigs apparently well. The quantity of soap increased to 4 ounces at each feeding.

18th. Pig No. 10 sick.

20th. Pigs all sick, refuse food. They ate sparingly of some corn given them.

21st. No appreciable change.

23rd. Pig No. 10 very sick. The muscles of the head and legs constantly jerking. Eats very little of the regular food, but partakes sparingly of corn.

25th. No change.

27th. Pigs very sick; have refused food containing soap for two days. Eat sparingly of corn. Soap discontinued.

The pigs which recovered from the immediate effect of the soap did not become thrifty for some weeks. It was late in September before they began to show signs of growth.

Post-mortem Examination.

Pig No. 4. The skin over the ventral part of the body and between the thighs of a pinkish colour; kidneys very pale; spleen normal. The blood-vessels of the mesentery much congested, the mesenteric glands enlarged and œdematous, many of them congested. Areas of the mucous membrane of the intestines, especially the ileum, were of a dark-reddish colour. The lungs and heart were not changed. The brain was deeply congested.

Pig No. 5. This pig showed lesions very similar to those exhibited by No. 4. The essential difference was an increase in the intestinal congestion.

Pig No. 7. The skin between the thighs and about the nose was of a bright pinkish colour. The liver was small, exceedingly firm and friable. The mesenteric blood vessels were injected, and the mesenteric glands were enlarged and œdematous, and many of them deeply reddened; a few were hæmorrhagic. Spleen normal. The cortex of the kidneys very pale, but the papillæ were abnormally dark. The mucous membrane of the intestines was congested in a few irregular areas, and the mucosa of the stomach covered with a thick layer of mucus. The heart and lungs were normal in appearance. The brain was very much congested.

Pig No. 8. The tissuec hanges in this animal were similar to those found in pig No. 7, with the exception that the kidneys were much congested.

A careful bacteriological examination was made of the liver, spleen, kidneys, and blood of each animal that died. In nearly every instance (all but two) the tubes of culture-media (agar and bouillon) inoculated remained clear. The two exceptions contained saprophytic bacteria and were probably contaminations from the air. This examination shows that the alkali had not favoured the migration of the bacteria from the intestines to the various organs of the body.

In order to check the result, several pigs from the same litters as those used in the experiment were kept in adjacent pens, and given the same kind of food. They all remained well. This fact, in addition to the negative results from the bacteriological examination, and the peculiar nature of the lesions, are sufficient evidence that the sickness and the fatalities among the pigs in the experiment were due to the soaps administered.

It is important to note that the lesions found in the pigs which died in the experiment were similar to those found in the pigs in certain of the outbreaks mentioned among swill-fed hogs. Considering the facts as they appear, it seems highly probable that the cause of death of the animals in certain of the outbreaks mentioned was the presence of the free alkali in the swill. This hypothesis is supported by the experiences of Mr. Davey and Dr. McCrank.

Chemical Analysis of the Soap Powders Used.

In order to ascertain the chemical nature of these soaps they were submitted to Mr. Geo. W. Cavanaugh, assistant chemist of the Agricultural Experiment Station, for analysis. The following report was received :—

"The soap powders used in the above experiment are mixtures of ordinary hard soap, that has been powdered or in some way reduced to a fine condition, and sodium carbonate. Sodium carbonate is known in commerce as sal soda, washing soda, or soda. In water it forms a caustic solution which is the lye used in making the old-fashioned hard soaps : Analysis : Soap A, 49·60 per cent. ; soap B, 55·42 per cent. : soap C, 55·54 per cent."

A careful inquiry has been made to ascertain the quantity of these soaps commonly used in washing dishes. This has revealed the fact that while the amount used by different individuals varies, the quantity is large, usually far in excess of the amount prescribed by the manufacturers. Thus I have been told, by thoroughly reliable people, of dishwashers who would use one-third of a box in cleaning the dishes after a single meal. While this is extreme, it is said not to infrequently happen, and it is easy to understand that the swill from these kitchens would contain far more of the alkali than we found necessary to produce fatal results, Should such excess in the use of these cleaning agents be indulged in for several days in succession, we have, in the light of the foregoing experiment, a cause for many fatalities among the hogs fed upon the dishwater.

In view of this danger it seems better to abandon altogether the habit of giving dishwater to hogs. Although the feeding of garbage is generally condemned, the scraps of vegetables and table refuse could, perhaps, if properly collected be used with safety. But certainly pure water is a much more wholesome drink, even for swine, than dirty dishwater. When the subject of "swill feeding" as a business is studied, and the conditions as they exist are understood, the wonder is not that some of the hogs die, but rather that any of them live.

It is not presumed that the poisoning by carbonate of sodium is the only cause of death among swill-fed hogs. Other destructive agencies are liable to be found in the decomposing garbage. The results of the investigation which the necessity of good farm-hygiene demands will very likely disclose the specific nature of many of them. Another fact worthy of consideration is that the investigation of the last year shows that nearly all of the outbreaks of hog-cholera and swine-plague which came to our attention started among herds of swine fed upon garbage and swill collected from the sources above-mentioned. This is significant, and it points to the undesirableness of feeding garbage to animals. In fact, if the total losses it occasions are counted, it is questionable if anything is gained in this attempt to save waste-products. It is stated in the official reports of the U. S. Department of Agriculture that

in 1896, 12 per cent. (which amounts to 5,440,176) of the hogs in this country died from disease.

Again, it has long been recognised that the feeding of garbage to hogs furnishes one of the most favourable channels for the introduction of hog-cholera and swine-plague bacteria. As a rule, wherever we find hogs in clean, well-ventilated pens. and fed upon wholesome food, we find thrift and health, and where the animals are surrounded with disgusting filth and fed upon decomposing slops or other unwholesome food we expect to and often do find disease.

It is, unfortunately, becoming a too-prevalent habit among our farmers to assume, as soon as one or two pigs die that some infectious disease, such as hog-cholera, is among them. It is further most unfortunate that they frequently entertain the fatalistic notion that a remedy is beyond their reach. Fully 25 per cent. of the outbreaks of reputed hog-cholera which we have investigated during the past year have not been hog-cholera or any other known infectious disease. While it is true that when hog-cholera becomes well established in a herd there is great danger that the majority of the animals will die, it is equally true that if the disease is not a genuinely infectious one that a majority of the animals can, by proper treatment, be saved. When a pig sickens and dies the thing to do is to examine, or have it carefully examined, to find out, if possible, what the cause of death is, in order that the best methods known for preventing the further spread of the disease may be promptly adopted.

If the examination shows the disease to be hog-cholera, swine-plague, or any other infectious disease, like anthrax or tuberculosis, the as yet uninfected and apparently well animals should be placed in other pens and the old ones disinfected. The animals should be given easily digested and nourishing food, plenty of sunlight and pure air. If others should become affected, the well ones should again be separated from the sick. The channel or way by which the specific cause of the disease got into the herd should be diligently sought for. As the most common way is through the food, it is always a safe precaution to change the diet.

It is certainly not desirable to acquire the reputation of having an infectious disease among one's animals when the real trouble is due to poor hygiene, to some irregularity in their care, or to an accidental poisoning.

If the diagnosis cannot be positively made it is best to put the apparently well hogs in a separate pen, provide them with good ventilation, wholesome food, and cleanliness. *It is important that the food should be changed.* By carefully observing the method of *strict isolation*, disinfection, healthful surroundings, and nourishing diet, many epizootics of infectious diseases have been checked, and it is safe to presume that if such precautions were rigidly adhered to nearly all of the losses now sustained from dietary causes would be saved. The observance of the rules necessary for the promotion of good health among mankind apply with equal force to the lower animals.

Conclusions.

From the foregoing the following conclusions seem to be warranted:

1. The greatest amount of loss sustained from swine-diseases in this State is among hogs fed upon the swill collected from hotels, boarding-houses, and other large institutions.

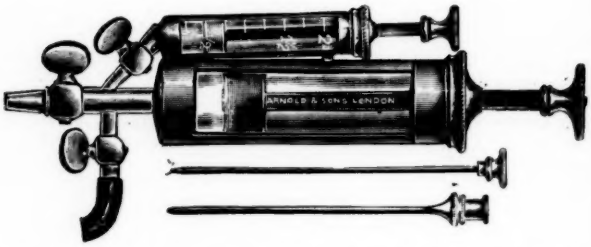
2. The cause of death in certain outbreaks of disease among swill-fed hogs is the direct poisoning of the animals by the excess of free alkali (washing-soda) in the swill. These alkalies come from the powdered soaps used in washing dishes.

3. It appears that small quantities of the powdered soaps do not immediately produce bad results. It is presumable that they can be used in quantities sufficient for the needs of cleanliness with perfect safety; but owing to the danger involved in their use it is safer not to give the water containing them to animals.

4. In addition to the unwholesomeness of garbage and kitchen-slops for animal food, and in addition to the losses sustained from the immediate effect of such kinds of food, hogs fed upon it are very liable to contract specific infectious diseases such as hog-cholera, swine-plague, and tuberculosis.

(*To be continued.*)

DEANS' NEW ASPIRATOR AND INJECTOR.



By an oversight the illustration of Mr. Deans' instrument, which should have accompanied the description at p. 456 of the last number of THE VETERINARY JOURNAL, was omitted, and only that of Mr. Platt—the description of which immediately follows—was inserted.

We regret the error, and append the illustration of Mr. Deans', referring to p. 456 for instructions as to its use and advantages.

Notes and News.

CENTRAL AND ASSOCIATED CHAMBERS OF AGRICULTURE.—At a meeting of the Central and Associated Chambers of Agriculture in London yesterday, Mr. St. John Ackers moved the adoption of the Cattle Diseases Committee's report, in which the committee, while recognising that a repetition of the Royal Commission on Tuberculosis was valuable, considered the failure of the Commission to deal satisfactorily with the fundamental question of compensation, made their recommendations unworkable. Mr. Channing, M.P., moved as an amendment, that while holding that the question of compensation must be considered in any administrative measure calling for compensation, the council concurred in the recommendation of the Commission, especially as to tuberculin, and the services of a veterinary surgeon

being gratuitously provided by the Treasury. This amendment was defeated by a large majority, and the committee's report was adopted. The council expressed disappointment with Mr. Chaplin's reply to the deputation on food products adulteration. On the motion of Mr. Yerburgh, M.P., the council urged the Government to appoint a Royal Commission on the whole question of national food supply in case of war.—*Scotsman*, June 8th.

THE CHAIR OF PUBLIC HEALTH.—The University Court of the University of Edinburgh has received the order of Her Majesty in Council declaring her approbation of the ordinance of the Scottish Universities Commissioners that a Professorship of Public Health and Sanitary Science be instituted in the University, the Chair to be called "The Bruce and John Usher Chair of Public Health." The court, in which the patronage of the chair is vested, intends to make the appointment on Monday, 18th July next. The court has learned with great satisfaction that through the munificence of a benefactor to the University, a sum sufficient to build and equip a laboratory and class-room in connection with the chair is to be placed at the disposal of the court.

THE vast majority of people in this country ought to be familiar with the general condition of that once happy and flourishing island Jamaica. At intervals more or less regular the island has had its exceeding bitter cry, and, of course, it has steadily sent out official reports on the remnants of its trade and commerce. Last year there was increased depression in the trade and agriculture of Jamaica. Compared with the preceding year, the value of exports fell from fully £1,873,000 to £1,470,200, and of imports from over £2,255,600 to £1,864,600, these figures representing decreases of 22·5 and rather more than 17 per cent. respectively. Last year the island suffered from prolonged and severe drought and falling prices. The natural consequences were short crops and diminished money returns. We were wont to be told that if the sugar industry of Jamaica could be put on even a moderately safe foundation the island might contrive to hold its own. But a digest of the last Blue Book clearly shows that exports of coffee have been falling away at a rate which is serious, if not alarming, and that fruit has not been a paying department to the growers. However, there is a small amount of comfort in the information that the people of Jamaica do not, as a rule, fall into distress after a spell of drought, or when the export trade is sluggish, because they subsist very largely on root and food crops grown around their homesteads, and have reserves of small stock, such as pigs, goats, and poultry, which are easily kept in good condition. Jamaica had its cattle disease problem two or three years ago, and the authorities of the island sent for Professor Williams, of Edinburgh, who reported, after careful examination of the stocks, that the prevalent sickness was due to a tick introduced by cattle from the American Continent. In other words Jamaica cattle stocks had Texan fever. Very strict quarantine regulations were put in force after the Professor's deliverance was given, and the latest information is that the disease has practically disappeared. Last year the stockowners of Jamaica looked forward hopefully to a time when their well-bred cattle would be very much needed in Cuba. It would be difficult to indicate what their hopes and speculations now are in regard to the Cuban market. Meanwhile science is doing something to improve crop growing. Soils which had almost been given up as exhausted or "ruinated" have come rownd to full bearing condition through the use of special artificial manures. Efforts are now being made to widen the crop-growing industry all round, and it is to be hoped that the island will move naturally and without more hardships into a state which will give a measure of satisfaction to

the home politicians who are now making for artificial aid.—*The Dundee Advertiser.*

THE INFLUENCE OF THE FIRST SIRE.—Sir: Just a line to say that my experimental foal arrived a few weeks ago, and there is no trace of the donkey in it. The dam was a four-year-old pedigree Clydesdale mare, by Garnet Cross. She was served, once only, by a Spanish jackass, and produced a nice mule, now a yearling, and bigger than a Clydesdale of same age. She had never been served before. Last year she was again served, only once, by Montrave Kenneth, a very well-bred pedigree Clydesdale stallion, and the result is a lovely filly foal, bearing every characteristic of a pure Clydesdale. This may interest Professor Ewart and others.—I am, etc., W. S. FERGUSON, Pictstonhill, Perth, 9th June, 1898.—*North British Agriculturist.*

ROYAL COLLEGE OF VETERINARY SURGEONS.—The following letter has been received from Mr. R. Rutherford, F.R.C.V.S., Secretary to the Board of Examiners of the Royal College of Veterinary Surgeons acting in Scotland, in answer to an inquiry on the subject:—"In answer to your question as to the correctness of the list of honours awarded to students of the Dick College, there is certainly an error in the list as it appears in Saturday's 'Scotsman.' Class A., one honour is correctly stated. Class B., 12 honour is incorrectly stated, there being only 7 awarded. Class C., (four years), 20 honour is incorrectly stated, there being only 7 awarded. Class D., 7 honour is incorrectly stated, there being only 2 awarded."—*Scotsman*, Tuesday, 31st May.

VETERINARY INSPECTOR FOR CARLISLE.—Following up their resolution to take all possible precautions against the health of the citizens of the Border capital being endangered through the drinking of tuberculous milk, the Carlisle Town Council have appointed Mr. Robt. Craig Robinson, V.S., inspector of dairy cattle within the city, at a salary of £100 a year. An important part of Mr. Robinson's duties will be to apply the tuberculin test to the dairy stocks in the city of Carlisle.

THE YORKSHIRE COLLEGE.—The Agricultural Committee of the Yorkshire College met at the Philosophical Hall, Leeds, on the 3rd June, in conference with the Joint Agricultural Council of the East and West Ridings, to select a candidate for recommendation to the Council of the College, with whom the appointments rests. Lord Herries in the chair. Three of the candidates attended the meeting by invitation, namely, Mr. John Campbell, B.Sc., lecturer on agriculture at the Harris Institute, Preston; Mr. T. H. Middleton, B.Sc., lecturer on agriculture at the University College of Wales, Aberystwyth; and Mr. Thomas Winter, M.A., professor of agriculture in the University College of North Wales. Ultimately it was decided to recommend Mr. Campbell for appointment. Altogether there were seventeen applications for the vacant post. [Mr. Campbell was a pupil at the New Veterinary College.—ED.]

Correspondence.

TSARO, BRITISH EAST AFRICA,
6th May, 1898.

To the Editor of THE VETERINARY JOURNAL.

DEAR SIR,—I send you a page of the *Zanzibar Gazette* concerning matters of veterinary interest.

It is not at all certain that rinderpest is the disease up-country—between the coast and Uganda, but it is absolutely certain that the disease if rinderpest has not been taken up country from the coast.

The disease that kills the bullocks on the coast of British East Africa is chiefly ox-surra, and not tsetse fly disease in the ordinary sense. The organisms of tsetse fly disease and that of horse surra in India, are said to be identical, but I am not at all inclined to believe this. I am also at present distinctly of opinion that the tryponosome of ox-surra is not the same as that of tsetse fly disease in Africa. I have not yet succeeded in producing the disease in equines by inoculating from the ox, and the former show no susceptibility to the disease as do the oxen. Microscopically, the organisms are not identical, as far as I can judge, with the microscope to hand. Of these diseases, however, I cannot deal at length at present.

I am told pleuro-pneumonia contagion and rinderpest are rampant between Victoria Nyanza, and 180 miles of the coast. I hope to shortly proceed to the seats of disease on behalf of the East African Protectorate.

I am, dear sir, yours faithfully,

A. G. HASLAM,

Vet. Captain and Transport Officer, Uganda Railway.

Sir Arthur Hardinge entertained Professor Koch and Madame Koch at lunch on Saturday, Mr. Donald MacLennan and Mr. Dundas, H.B.M.'s Vice-Consuls, being present, as also were Dr. Macdonald, the Principal Medical Officer of the East African Protectorate, and Veterinary-Captain Haslam, M.D., of the Uganda Railway Department.

Professor Koch riveted the attention of his hearers both at lunch and for two hours afterwards. During the whole of the latter time he was keenly discussing the various diseases specially affecting man and beast in these regions, and bringing to bear on certain features observed locally, his wider experience obtained from observations in other countries.

Having dealt with plague and leprosy, one a possible visitant here, the other an actuality—provision for dealing with which has at last been made here—he discussed malaria, Blackwater fever, and the Tsetse fly organism. Dr. Haslam, having some excellent specimens of varieties of the fly with him, offered a selection to Dr. Koch, which the learned professor gladly accepted.

Rinderpest was then gone into and occupied the lion's share of the conference, the different varieties as found in India, South Africa, and Europe being compared. The different methods of treatment were then fully discussed, and such methods of procedure as have proved utterly useless, as attempted segregation and slaughter, warmly denounced.

Professor Koch reaffirmed his belief in the efficacy of bile injection if done simultaneously over the whole area to be protected, and while the animals are still untouched by the pest; intelligent men or women are needed for its proper performance. A sufficiency of the simple appliances must be at hand. As the time of immunity conferred is short, Dr. Koch further advised the establishment of serum injection as soon as possible. He declared his thorough belief in the value of Dr. Turner's and Dr. Cory's discoveries in serum treatment in South Africa. Bile injection is the only readily available remedy; the serum treatment should follow on as soon as practicable.

The present fatal epidemic in the East Africa Protectorate was then fully gone into, Dr. Macdonald laying before the professor the reports he had received from up-country, which go far to show that the epidemic is due to a

visitation of rinderpest. Dr. Koch declared that only one thing was to be done, to send some competent person already acquainted with rinderpest to see what the epidemic really was, with full powers to deal with it forthwith, and he had come to the conclusion from that conference, that Dr. Haslam was the right man to go, and no time should be lost in getting him up to the seat of the epidemic. He should take great interest in the matter, and begged that reports might be sent him from time to time as to what was found, and as to what measure of success attended the steps taken.

Sir Arthur Hardinge at once took steps to carry out Dr. Koch's recommendations. As it is desirous that the Principal Medical Officer should know what is going on, Dr. Macdonald will, if possible, accompany Dr. Haslam up-country.

Latest reports from the mainland state that the cattle disease is rampant in Ukambani and Nandi. Eighty per cent. are dead and the rest sick.

To the Editor of THE VETERINARY JOURNAL.

CHESTERFIELD.

SIR,—May I be permitted to bring before the profession, through the medium of your widely-read journal, an instrument to be known as "Somerset's Quittor Probe," which has been made for me by Mr. Huish, of Fisher Street, London, and from whom it might be obtained.

This probe is designed for use in those cases of quittor which it is desired to treat by the method known as plugging, in which pellets of perchloride of mercury, etc., are passed down to the bottom of the sinus.

In using an ordinary globular-headed probe, great difficulty is experienced in passing the pellets into the sinus, as they work up at the side of the probe head instead of being carried down in front of it. This difficulty is overcome in my probe by the cupped head, which enables one to easily pass the pellets to the part required.

The other end of the probe is spatulate, and is intended to be used when the slough has formed, in order to liberate it from the attachments which

often exist at the root of the slough even when separation has taken place all round.

The probe is longer and stouter than those in general use, and is made of steel, nickel-plated, as I have found that when made of German silver, they bend and get out of shape if much pressure is used, as is sometimes necessary when removing the core.

This probe is just as serviceable for all ordinary purposes as the probe in general use. I have also found the cup very useful in suturing when the needle becomes wet and slippery with blood. If the head of the needle is placed in the cup, much more pressure can be used than by the fingers alone.

The spatulate portion is useful in depressing the tongue when examining the fauces or throat of dogs, cats, etc., in assisting the elevation or removal of depressed or splintered pieces of bone, and in a variety of ways which will suggest themselves to the practical surgeon.

Yours faithfully,

FRANK L. SOMERSET, M.R.C.V.S.

To the Editor of THE VETERINARY JOURNAL.

TEMPLEMORE, IRELAND,
15th June, 1898.

SIR,—I beg to enclose you notes about a case I had some years ago. Might I ask, through the medium of THE VETERINARY JOURNAL, what it is Mr. Deans, of Bishop Auckland, injects in the operation for bog-spavin?

Yours faithfully,
JAMES MAHONY, V.S.

Review.

VETERINARY PATHOLOGY, VOL. I. INFECTIVE DISEASES OF ANIMALS. BY FRIEDBERGER AND FROHNER. Authorised translation by M. H. HAYES, F.R.C.V.S., pp. 532 + x. London. W. Thacker & Co.

OUR readers will remember that some little time ago a translation of Friedberger and Fröhner's *Lehrbuch der speciellen Pathologie und Therapie der Hausthiere* emanated from the American press. Unfortunately this translation was unauthorised, and consequently was suppressed. Still, the copies which found their way into this country and into the hands of the members of the veterinary profession gave those who had not a sufficient knowledge of German to read the work in the original text, an insight into the excellent qualities of the book. No doubt, therefore, some regret was felt at the suppression of the translation. Then came the welcome announcement that Captain Hayes—whose name is now well known in veterinary literature—had acquired the rights of translation, and was proceeding with the work of conversion of the book into the English language. Vol. I. is now before us, and, as its sub-title indicates, treats of the infective diseases of the domestic animals.

On account of the subject-matter this is the volume which will most particularly appeal to the veterinary surgeon. Such common diseases as Tuberculosis, Anthrax, Swine Fever, Actinomycosis, Tetanus, Quarter Ill, and Glanders, to mention only a few of many, are considered particularly from their pathological aspect. Clinical considerations are, however, not neglected, but are entered upon in some cases very fully.

The scope of the work might be very fairly indicated by taking what may be considered a typical chapter, and mentioning the headings of the various paragraphs. For example, Chapter XXVIII. deals with Anthrax under the following heads:—History, Bacteriology, General Pathogenesis, General Remarks on its Occurrence, Geographical Distribution, Statistics of Epidemics, General Anatomical Changes, General Symptoms, Forms of Anthrax, General Diagnosis, Differential Diagnosis, Prognosis, Therapeutics, Protective Inoculation, Anthrax in Cattle, Horses, Sheep, Goats, Pigs, Dogs, Cats, and Birds. Truly, then, may it be said that this disease has not been treated in any cavalier manner. The other diseases receive equally extensive treatment.

We take it that it is quite unnecessary to pass under review the material contained in this work. The merits of the original work are sufficiently well known and universally acknowledged. What we have to deal with here is the manner in which the translation has been carried out. Anyone who has any experience whatever with the conversion of a foreign language into English, knows the difficulty of the task. Literal translations are, of course, comparatively easy, but if a readable product is to be the result much care and thought has to be expended. The German language, when judged by our English standard, is notoriously involved in its construction. Mark Twain has poked fun at it in this connection, and has said in one of his books that usually when the verb of a sentence is at last run to earth it will be somewhere on the next page or so. Remembering, then, the difficulties of translation, and the fact that the translator has to take the author's ideas and clothe them with new words in entirely new combinations, we feel that Captain Hayes is to be congratulated on the satisfactory manner in which he has carried out the work.

It is the easiest matter possible to find slips and typographic errors in a first edition. We need not waste time in ferreting out every small error and holding it up to ridicule, for this at best is but a puerile amusement. On the other hand, let us say that the literary sins of the translator in the work under review are notably few in number.

There is one point where we think an improvement might be made. Such doses as 0.005 grammes are undoubtedly very definite and quite satisfactory to one who is thoroughly conversant with the metric system; but we venture to surmise that, in this country, the veterinary profession as a whole has not yet awakened to the subtle beauties and conveniences of the metric system of weights and measures, and, therefore, until this devoutly-to-be-prayed-for consummation takes place, it would have been better, in the interests of the practitioner, to have converted the doses into the English weights.

Captain Hayes has not rested satisfied with the mere work of the translator, but has added an appendix which includes chapters on Surra, Tse-tse Fly disease, South African Horse Sickness, Diseases conveyed by Ticks, and on the terms Infection and Contagion.

Further, Dr. Newman, of King's College, London, has written a chapter dealing with some general and elementary questions on Bacteriology.

We feel that we can safely commend this book to the notice of those veterinary practitioners who desire a work of reference on veterinary pathology. At the same time we would extend our thanks to Captain Hayes in common with other translators who bring the work of our scientific Continental brethren within the reach of those of us who are not linguistically accomplished.

Communications, Books, Journals, etc., Received.

Recueil de Médecine Vétérinaire (Alfort); L'Echo Vétérinaire (Liège); Annales de Médecine Vétérinaire (Brussels); Berliner Thierärztliche Wochenschrift (Berlin); Deutsche Thierärztliche Wochenschrift (Hannover and Karlsruhe); La Clinica Veterinaria (Milan); La Revista Veterinaria (Buenos Aires); Agricultural Journal (Cape Town); Modern Medicine (Battle Creek, Michigan); Bulletin de la Société des Sciences (Bucarest).